CASAS DE PAJA
Maya House Architectures
Traditions & Transformations

James Stuart Davidson

A thesis submitted for the degree of Doctor of Philosophy at
The University of Queensland in June 2009

School of Architecture

Image of a Tzotzil house under construction (exact location, date and photographer unknown). Source: Instituto Nacional Indigenista, Mexico City.

Declaration by author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my research higher degree candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

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Statement of Contributions to Jointly Authored Works Contained in the Thesis

The *Towards A Unified Cross-Cultural Theory of Architecture* section of Chapter 8 was published as a conference paper and subsequent article in:

Memmott, P. & Davidson, J. "The Configuration of a World Cross-Cultural Theory of Architecture: Exploring the Treatise," in Creating and Contesting Exclusionary Architectures ed. N. AlSayyad, *Traditional Dwellings and Settlements Working Paper Series* (San Francisco: International Association for the Study of Traditional Environments, Center for Environmental Design Research, Volume 195, 2006).

Memmott, P. & Davidson, J. 2008 "Exploring a Cross-Cultural Theory of Architecture", in AlSayyad, No. (ed) *Traditional Dwellings and Settlements Review*, Journal of the International Association for the Study of Traditional Environments, Vol. 19, No. 11, Spring, pp.51-68.

Statement of Contributions by Others to the Thesis as a Whole

No contributions by others.

Statement of Parts of the Thesis Submitted to Qualify for the Award of Another Degree

None.

Published Works by the Author Incorporated into the Thesis

Davidson, J.S. 2002 "Western 'Architectural' Ideology and its Impact on the Traditional Building Practices of the Maya Peoples of Guatemala and Southern Mexico", in Macarthur, J. & Moulis, A. (eds) *ADDITIONS to architectural history: XIXth annual conference of the Society of Architectural Historians [Proceedings]*, Australia and New Zealand, Brisbane.

Davidson, J.S. 2006 "Authority in Maya Domiciliary Transformation: A History of Hypertraditions". [Paper prepared for the "Hypertraditions" Conference of the International Association for the Study of Traditional Environments (IASTE) in Bangkok, 15-18/12/06].

Davidson, J.S. 2006 "Authority in Maya Domiciliary Transformation: A History of Hyper-Traditions", in AlSayyad, N. (ed), in The Hyper-Traditions of Domestic Space, ed. N. AlSayyad, *Traditional Dwellings and Settlements Working Paper Series* (San Francisco: International Association for the Study of Traditional Environments, Center for Environmental Design Research, Volume 197, 2006).

Memmott, P. & Davidson, J. 2006 "The Configuration of a Cross-Cultural Theory of 'Architecture' – Exploring the Treatise". [Paper prepared for the "Hypertraditions" Conference of the International Association for the Study of Traditional Environments (IASTE) in Bangkok, 15-18/12/06].

Additional Published Works by the Author Relevant to the Thesis but not Forming Part of it

Davidson, J. 2007 "In Pursuit of the Vernacular: Hungary", in *Architectural Review Australia* 102: World, South Melbourne, Victoria, pp.108-113.

Memmott, P. & Davidson, J. 2007 " 'Architecture': exploring the treatise", in *Architectural Theory Review*, (eds) Rubbo, A. & Snodgrass, A., Vol. 12, No. 1, pp.78-96.

Memmott, P. & Davidson, J. 2008 "Indigenous Culture and Architecture in the South Pacific Region – 25 years of SAHANZ Research". Presented at the HISTORY IN PRACTICE: *The 61st Annual Meeting of the Society of Architectural Historians* [SAH], Cincinatti, Ohio, U.S.A. 18-21 April 2008.

Memmott, P. & Davidson, J. 2008 "Indigenous Culture and Architecture in the South Pacific Region – 25 years of SAHANZ Research". Presented at the HISTORY IN PRACTICE: *The 25th annual conference of the Society of Architectural Historians, Australia and New Zealand* [SAHANZ], Deakin University, Geelong, Victoria, 3rd – 6th July 2008.

Memmott, P. & Davidson, J. 2008 "Indigenous Culture and Architecture in the South Pacific Region – 25 years of SAHANZ Research", in *Fabrications: A Regional Practice,* The Journal of the Society of Architectural Historians, Australia and New Zealand [SAHANZ], Volume 18, Number 1, June 2008.

Acknowledgements

I would firstly like to thank my principal supervisor, mentor and great friend Professor Paul Memmott, who over the last nine years has never faltered in his support of my work, always trusting, always patient, always there. I must acknowledge his legendary contribution to the study of Australian Aboriginal environments, which for more than three decades has been exceptional. Paul, you cannot imagine how much I have learned from observing and participating in your world. I will never forget...THE PATH OF THE LONELY INTELLECTUAL WARRIOR!

I would also like to thank my Associate Supervisor Dr. Gregory Bamford who gave sound positive advice at the very early stages of this thesis when I needed it most. I have also benefited from the energies of Professor Michael Keniger who was my Associate Supervisor until moving onwards and upwards to be Deputy Vice Chancellor; and Professor John Hockings who also made the move from being my Associate Supervisor to higher realms of responsibility.

Thanks also go to the staff and students of the Aboriginal Environments Research Centre at the University of Queensland; Carroll Go-Sam, Lee Sheppard, Linda Thomson and Anna Meltzer, I will miss our 'deep and meaningfuls'. A special thanks to Carroll who for the last ten years has complemented the Old Man's involvement in the thesis - thank you for your insights.

I am indebted to the staff at the School of Architecture, University of Queensland, who over the years have given much of their time and energy to this and other projects of mine. Special consideration must be given to Professor Brit Andresen, who while not being directly involved in thesis supervision, always gave support when needed and words of wisdom when sought.

Thank you to Professor Howard Davis for his valuable comments on my theory chapter.

To the staff at Donovan Hill, thank you for being understanding. I would like to express my thanks to Timothy Hill for his friendship and support over the last ten years; I hope our work together continues in whatever form it takes. Thank you to Hamilton Wilson of Wilson Architects for the use of his A1 scanner.

A huge thanks to Andrew Schindler, Anna Van Hees, Danny Mathis and Kirsty Galloway who spent long tedious hours slaving over the drawing board to produce the beautiful hand drawings found throughout the thesis. A special thanks to Andrew Schindler who started on the drawings four years ago and who has had significant input into the quality of the finished documentation.

A special gratitude extends to Dr. Daniel Franks who recently finished his own journey of wonderment. Congratulations Daniel and thank you for putting up with my navel gazing over the years, oh, and for

your valuable comments on my final thesis draft. I hope we continue those long conversations about life and liberty, perhaps our professional paths will cross someday.

A huge thanks goes to my quazi-Aussie American friend David Naylor who was there in Cobá when this research all started and who remains close to my heart for his support at just the right times. To Kerry Webb (nee Neville) thank you for your wonderful baked dinners over the years, undying support, and well-typed field notes in those early years.

I could not have completed this thesis without the support of many organisations, who continue to protect the history and culture of the Maya. These organisations include CIRMA, PLFM, OKMA, CEDIM, Cholsamaj Publishing House and ALMG.

Thank you to my father Jim, who has always presented a positive viewpoint on most things in life; I have learned a lot from your gregarious nature.

Thank you to my mother Fay without whose example I would never had learned the value of maintaining strength through adversity, you are, and always will be, my inspiration.

The second biggest appreciation goes to my wonderful wife Dr. Phoebe Hart who for the last eight years has shown great patience and understanding, putting up with my extroverted and spontaneous nature, and I'm sure, frustrating habits. Boodgie, you haven't known me without this academic responsibility; I wonder what new turns life will take – perhaps children! Thank you also for spending hours carefully editing and composing suggestions to my thesis drafts, I have learned so much from you.

And finally, the biggest thanks belongs to those Maya peoples who allowed this research to happen; those who trusted my intentions and also saw value in recording these house traditions before they finally passed, many of you I don't know your names. I believe that the Maya have an enormous capacity for kindness and tenacity of spirit, and I am sure you hold in your hands solutions to many of the planet's current ills. I know our destinies are inextricably linked and I look forward to reacquainting with you all in the coming years. Gracias especialmente a Tomás, María, Baldomero, Nic'te, Elsa, Lolmay, Rogelio, Juan Antonio, Lala y todas.

Abstract

In 1938, the Carnegie Institution of Washington published the results of ethnoarchaeological research conducted in Guatemala and southern Mexico by North American archaeologist Robert Wauchope. This seminal work, titled *Modern Maya Houses: A Study of Their Archaeological Significance*, aimed to understand the significance of traditional Maya houses (known in the study region as *casas de paja*) for the identification and interpretation of ancient dwelling remains in archaeological excavations. At the time, Wauchope documented only ten distinct house types among six of the 28 Maya language (cultural) groups. Due to its narrow scope, Wauchope's investigation focused more on the physical properties of house construction and less on the social behaviours and beliefs generating the architectural forms. In recognition of Wauchope's survey remaining incomplete, the primary aim of this dissertation has been to ethnographically record and comparatively analyse the remaining *casas de paja* in contributing to a greater cross-cultural understanding and theory of the entire repertoire of Maya house architectures. In combining both architectural and anthropological method, the author was able to make a number of important research findings; most notably that a pan-Maya, and pre-Columbian, semantic relationship existed between individual house types, indexing a shared cultural history and proto-Maya house architecture that possibly originated as early as 4,000 years prior to present times.

In addition to the architectural documentation of house traditions, the author also investigated the processes of house transformation and change in the 70 years since Wauchope's original survey. The rapid rate of built environment transformation in both Guatemala and Mexico over those intervening years underscores the importance of recording these cultural traditions before they pass. In contemporary times the few remaining *chozas* or *casas de paja* stand as historical reminders to a time past but not forgotten and embody traditional knowledge related to cultural beliefs and behaviours, which are intimately linked to the land, materials and climate of the region. Chapter 1 of the dissertation introduces the study region and establishes the primary aims and objectives of the research. Chapters 2 and 3 present the theoretical background and methodological approach governing the research project while Chapter 4 gives an historical overview of Maya house traditions. Chapters 5 and 6 are devoted to the ethnographic findings of the regional survey and Chapter 7 discusses Maya house change in the years since Wauchope's 1930s investigation. Chapter 8 details the contribution which the ethnographic investigation makes to Euromerican architectural theory in relation to non-Euromerican material and cultural histories in contributing to a world cross-cultural architectural canon and scholarship.

In coming to a greater understanding of a past (pre-Columbian) and present (Maya *casas de paja*) subject, the thesis calls for an understanding, appreciation and acceptance of non-Euromerican architectural forms by Euromerican academics and practitioners in moving toward a greater acceptance of a diversity of human needs in the creation of social, cultural and built environments. The overall

significance of this thesis lies in the position that the sustainability of lifestyle practices, and allocation of wisdom, skills, and the fulfilment of human needs, as embodied in building 'traditions', are of major relevance to current and future generations.

Keywords
pre-Columbian houses, Maya, architecture, tradition, transformation, culture change, anthropology, ethnoarchaeology.

Australian and New Zealand Standard Research Classifications (ANZSRC)
120103 50%, 160104 30%, 210103 20%

Spanish Word Index
The following list identifies those terms used more than once in this dissertation.

Aldea: hamlet or village
Atraso: backwards
Bahareke: wattle battened wall finish
Bloque de Concreto: concrete block
Casa de Paja: thatched house
Casa de los Pobres: house of the poor
Casa Tradicional: traditional house
Cedro: cedar tree
Choza: common term for a thatched house in Guatemala
Caoba: mahogany
Cofradía: brotherhood
Congregación: congregation
Finca: country estate, farm
Guano: type of palm found in the lowlands of Yucatan and Guatemala
Hoja de Maíz: maize leaf
Horcones: forked structural posts found in Maya houses
Ladino: mixed race (Spanish/Indigenous)
Milpa: field where maize and other vegetables and fruits are produced
Paja: short thin grass/straw
Pajon: tall thick grass/straw
Pasado: passed/past
Pino de Cipres: cypress pine tree
Rancho: common term for a thatched house in Mexico
Reducción: reduction
Sacerdote: priest, shaman, or sacred teacher
Vara: measuring stick
Violencia: violence

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Tables

Abbreviations

AIA: American Institute of Architects

ALMG: Academia de las Lenguas Mayas de Guatemala

AVAW: Atlas of Vernacular Architecture of the World

CAD: Computer Aided Drafting

CEDIM: Centro de Documentacion Indigena Maya

CID: Chicago Institute of Design

CIRMA: Centro de Investigaciones Regionales de Mesoamérica

EBS: Environment Behaviour Studies

EVAW: Encyclopaedia of Vernacular Architecture of the World

EZLN: Ejército Zapatista de Liberación Nacional

HfHI:Habitat for Humanity International

MOMA: Museum of Modern Art

NAFTA:North American Free Trade Agreement

OKMA: La Asociación Oxlajuuj Keej Maya' Ajtz'iib'

PER: People Environment Relations

PLFM: El Proyecto Lingúístico Francisco Marroquón

POE: Post Occupancy Evaluation

VAS: Vernacular Architecture Studies

Little by little heavy shadows and black night enveloped our fathers and grandfathers and us also, oh, my sons...! All of us were thus. We were born to die!

The Annals of the Cakchiquels (ca. 1550-1600)

Death and tradition are very close relatives, and neither of these likes change...Tradition wants to contain your creativity, and Death wants to eat it.

Martin Prechtel in *Secrets of the Talking Jaguar*

I
Introduction

Official estimates of population growth show that by 2050 there will be 10 billion people living on the earth.[1] Along with climate change, over-population is considered to be one of the major dangers affecting human survival. Current global political debate centres on the burden of over-population in creating health crises, food shortages and the depletion of our natural environment and resources, while mostly ignoring the impact of human settlement expansion. As an architect, the author is concerned with the role and relevance of architecture in the face of such enormous challenges in the changing global habitation stock. His interest lies in how human societies can appropriately and effectively house an ever-increasing population given the depletion of natural resources and the effects of climate change. In *Vernacular Architecture in the Twenty-First Century*, Asquith and Vellinga state that in order to ensure the well-being of the global population, the "problem of housing the world" needs to be recognised and faced by all governments and policymakers.[2] Kultermann in *Architecture in the 20th Century* identifies a similar challenge, which individuals and collectives involved in architectural design, planning and construction must address: "It is no longer possible to live with the illusions and ideologies that have dominated and veiled public debate. Architecture will have to be redefined according to the changes in the macro scale of worldwide transformations, as well as in those in the micro scale of human interrelation."[3]

Ultimately, the effects of climate change and over-population will be experienced by every living organism on this planet. On the surface, *Casas de Paja: Maya House Architectures, Traditions and Transformations* focuses on a grouping of peoples who may appear to have a diminished capacity to deal with the catastrophes faced by all. However, contact with industrialised technologies has led to the transformation of pre-industrial built forms in many non-Euromerican settings. One could now argue that the experience and phenomena of change in settings such as these offers solutions for the outlook of post-industrial human habitation. Thus, an appropriate response could be to commence a detailed examination of the pre-industrial dwelling practices of one of the world's oldest societies, the Maya.

Accordingly, the current investigation presents the documentation and analysis of pre-industrial Maya dwellings or *Casas de Paja*, which at the time of writing were undergoing dramatic changes to their architectural forms. While significant to a cross-cultural understanding of the transformation of pre-industrial house practices, this thesis also holds importance to the Maya realm as it investigates pre-Columbian Maya house traditions, a relatively unknown and poorly understood subject matter.

Amos Rapoport in *House, Form and Culture* describes the significance of the so-called 'unimportant dwelling' to the environmental matrix of human socio-cultural settings, and illustrates that through the study of their dwelling activities those apparently inconsequential buildings have the ability to

teach the most about past, present and future cultural conditions.[4] Notably, the house as a field of analysis reveals its status as a human cultural artefact, intimately linked to the aspirations, beliefs and behaviours of its owner-occupiers-builders, which is also a readable physicality in understanding change within human cultural settings. Rapoport continues: "The topic of choice may be relevant to other aspects of developing countries, and may throw light on the whole problem of understanding the relation of built form to the cultures concerned, in turn making clear the value of cross-cultural analysis in relation to the house and built environment in general."[5]

In studying the change within pre-industrial Maya building practices, the author has attempted to place this research in a wider framework of understanding about the importance for human groups to maintain their distinctive cultures and lifeways in producing heterogeneous built environments. The reason for taking this action lies in the belief that the sustainability of wisdom, skills and the fulfilment of human needs as embodied in pre-industrial building traditions are of major importance to future post-industrial generations. This is not only important in terms of creating and maintaining heterogeneous cultural identities but also on providing housing solutions for the millions of people in the 21st Century who find themselves at the opposite end of the global economic spectrum to those most responsible for the climatic situation and consumption patterns currently threatening human populations around the world. As Davis in Planet of the Slums recounts, sometime in the last few years a watershed moment has occurred in human history where for the first time, the urban population of the earth now outnumbers the rural.[6] At this point in human history we do not know the potential impact of this 'epochal transition' on the future of human built environments around the world. According to the World Bank, nearly half the world's population or 2.8 billion people live in poverty.[7] Perhaps the answer to this problem lies in a better understanding of those human processes and products that have gone before this moment?

Study Region and Languages

The Maya region is located in Mesoamerica, which extends from northern Mexico to Costa Rica in southern Central America. At the time of writing, there were several hundred Indigenous languages from seven major linguistic families in the region – the Maya being one of these. The bounds of the study region (Figure 1.1) align with the historical political boundaries established after Spanish invasion in the 16th Century with the Maya realm (Figure 1.2) encompasses southern Mexico (Yucatan and Chiapas), Guatemala, and the western and southern areas of Belize and Honduras respectively.

Maya Linguistic Affiliations

In *Idiomas de Mesoamérica*, Kaufman[8] reconstructs the common linguistic and cultural origins of the Maya groups in existence at the time of writing, and illustrates that in approximately 2000 B.C. there was a florescence of Maya societies whereby the original proto-Maya language split into two,

and eventually four others, now commonly called the K'iche'an-Mamean, Q'anjob'alan-Chujean, Yukatekan, and Ch'olan-Tzeltalan linguistic divisions (Figure 1.2).[9] This pattern was repeated in approximately 500 year intervals whereby in 1000 A.D., there were 31 Maya languages in the region with 28 still in existence in the Maya region at the time of the current investigation. Of these 28 languages, 21 are located in Guatemala, seven in Mexico, and one each in both Honduras and Belize. The traditional homelands of four of these linguistic groups have been split by the political boundaries of contemporary nation-states with the Ch'orti' located in the border region of Guatemala and Honduras, the Kekchi' in both Guatemala and Belize, and the Tektitek and Chuj languages which border Guatemala and Mexico.

In light of this, the linguistic and demographic information used in this thesis is drawn from two separate authorities with affiliations and population figures coming from the Summer Institute of Linguistics (SIL), while the actual spelling of the various Maya names comes from the *Academias de Las Lenguas Mayas de Guatemala* (ALMG), a Maya linguistic organisation based in Guatemala City, Guatemala. ALMG is best known throughout Guatemala, and more recently in Mexico, for its translation and consultancy work in Maya communities. SIL is an American Christian linguistic organisation that aims to research undocumented minority languages, train field linguists and provide resources to assist in data collection and analysis.[10] Due to its intense history of research work with local communities in the study region, SIL was chosen as a more reliable representation of 'unofficial' population figures than data collected during formal censuses run by the Mexican and Guatemalan, non-Indigenous Governments.

At the time of writing there were eight Maya language groups inhabiting the Chiapas, Yucatan and Tabasco regions of southern Mexico: Yukatek (Yucatan), Tzotzil (Chiapas), Tzeltal (Chiapas), Ch'ol (Chiapas), Yokot'an (Tabasco), Lacandon (Chiapas), Tojolob'al (Chiapas), and Chuj (Chiapas). The remaining Maya language groups lived within the current borders of Guatemala, and generally corresponded to government departments: Itza' (Petén), Mopan (Petén), Chuj (Huehuetenango), Q'anjob'al (Huehuetenango), Popti (Huehuetenango), Akatek (Huehuetenango), Sipakapense (San Marcos), Mam (Quetzaltenango), Tektitek (Huehuetenango), Awakatek (Huehuetenango), Sakapultek (Quiche), Achi' (Baja Verapaz), K'ichee' (El Quiche), Kaqchikel (Sololá), Tz'utujil (Sololá), Pokomam (Jalapa), Pokomchii' (Alta Verapaz), Uspantek (El Quiche), Kekchi' (Alta Verapaz), Ixil (Quiche) and Ch'orti' (Chiquimula). Table 1 (Appendix F) outlines the historical linguistic affiliations, geographical locations and current populations of each Maya language group, present at the time of writing.

The Geographical Setting & Linguistic Groups by Region

In terms of geographical setting, the Maya region comprises three distinct environmental zones known as the Highlands, the Midlands and the Lowlands (Figure 1.4). The Highlands, with an altitude

FIGURE 1.1: The Study Region for this research bounds the Yucatan, Chiapas and Tabasco regions of southern Mexico, the entirety of Guatemala, south-western Belize, and western Honduras.

FIGURE 1.2: The 28 Maya languages and their present locations in the Study Region. Locations drawn from a variety of historical sources.

above 1800 metres, and known throughout the region as *tierra fría* (cold country) are characterized by isolated terrain with high ridges and deep gorges. Average daily temperatures range between 3 and 17 degrees Celsius with humidity levels from 25 and 80 percent, and an average rainfall of 650 millimetres per year. The Midlands or *tierra templada* (temperate climate) with an altitude ranging from 600 to 1800 metres above sea level, are characterized by both wet and dry areas, being heavily forested with pines and oaks at the lower elevations and temperate rainforest at the higher. Temperatures range between 17 and 22 degrees Celsius with relative humidity from 65 to 90 percent and an average rainfall of 1000 millimetres per year. The Lowlands, or *tierra caliente* (hot country) are characterized by hot, humid climate and tropical rainforest with an altitude below 600 metres and average daily temperatures between 22 and 35 degrees Celsius. Humidity levels in the Lowlands range from 75 to 90 percent with an average rainfall of more than 1000 millimetres per year. The region has one of the most diverse natural and cultural environments on earth.

An interesting picture emerged when the linguistic affiliations above were compared to their geographical distribution (Figure 1.5). It appears that the majority of linguistically-related groups have maintained relative geographic proximity over the past 4,000 years. For instance, those languages forming part of the Q'anjob'alan-Chujean and K'iche'an-Mamean linguistic families were located in the Highlands and Midlands specifically, whereas the Yukatekan and Ch'olan-Tzeltalan (other than the Tzotzil and Tzeltal) were primarily located in the Lowlands. It was possible to observe that the majority of Maya languages were located in the Highland and Midland regions of Guatemala and Mexico. One hypothesis of this geographical-linguistic relationship is that the Highlands are more fertile with volcanic soils and higher rainfall, thus able to support greater populations; while the Lowlands comprise a limestone shelf with limited top soil and infrequent rainfall, and are thus less able to support intensive agricultural production over time resulting in smaller populations.

Research Foundation

Of critical importance to this thesis is the work of American archaeologist Robert Wauchope. In 1938, the Carnegie Institution of Washington published *Modern Maya Houses: A Study of Their Archaeological Significance,* presenting Wauchope's ethnoarchaeological investigation of the Maya house, the purpose of which was to enlighten the archaeological profession of the day as to the material significance of the Maya house traditions for the identification and interpretation of domiciliary remains in archaeological excavations. Wauchope writes that earlier investigations[11] "made it clear that very little information, except upon certain features of the substructures, could be gleaned from excavation without some examination having first been made of modern houses and the way in which they fall to pieces."[12] In his publication, he points out that the difficulties in determining dwelling mounds related to the state of house disintegration whereby perishable construction materials were less likely to stand the test of time. Wauchope explains that the reasons for choosing Maya houses

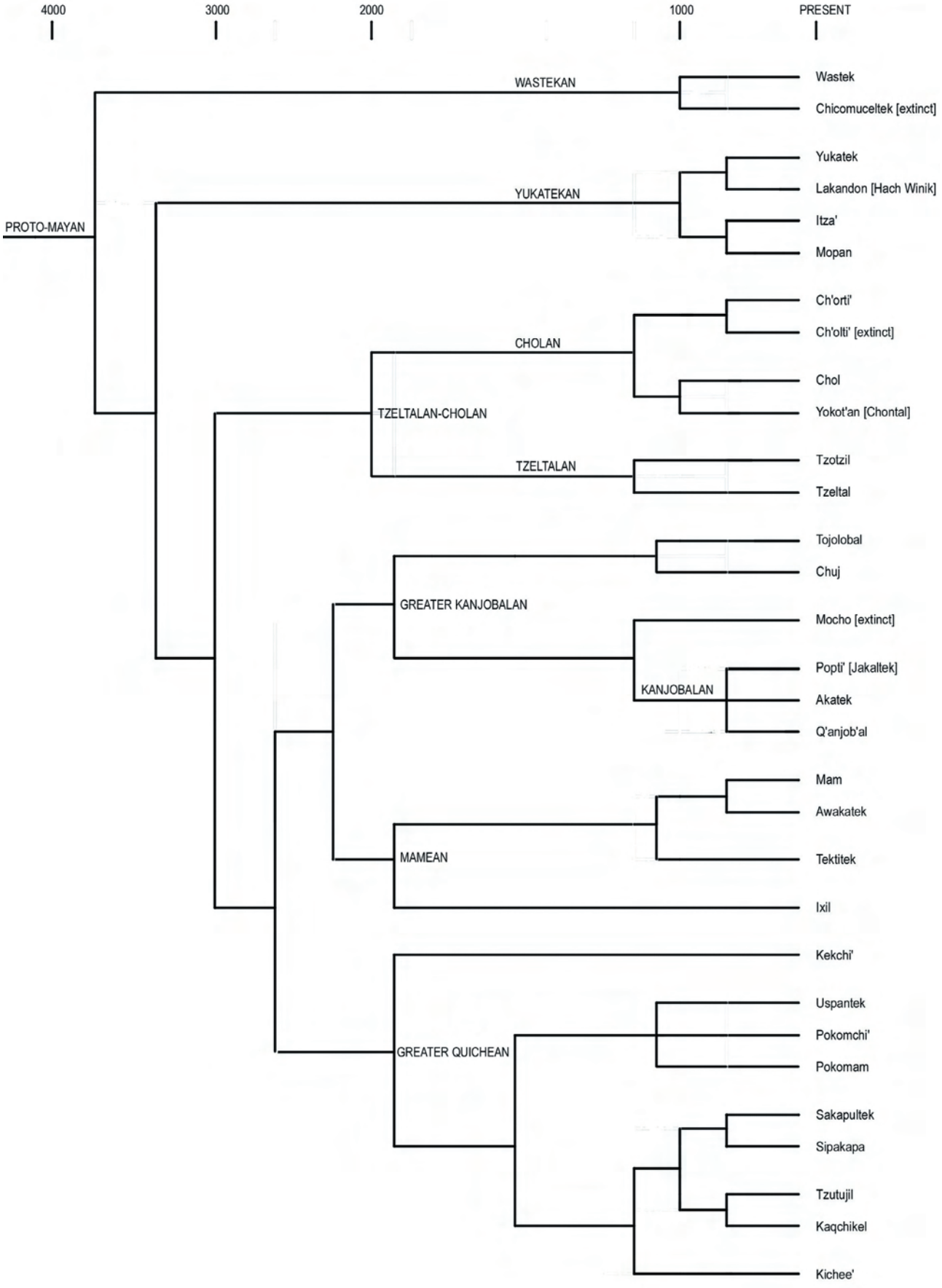

FIGURE 1.3: The linguistic relationships of all Maya languages over the last four thousand years. The timeline shows the approximate era when each sub-branch broke away from its predecessor to become a distinct language in its own right. Source: Kaufmann 1974.

FIGURE 1.4: The region's geographical setting showing the location of the distinct Highlands, Midlands and Lowlands climatic/topographic zones.

FIGURE 1.5: The location of Maya language groups in relation to geographical setting, note the greater number of Maya languages in the Highlands than the Lowlands.

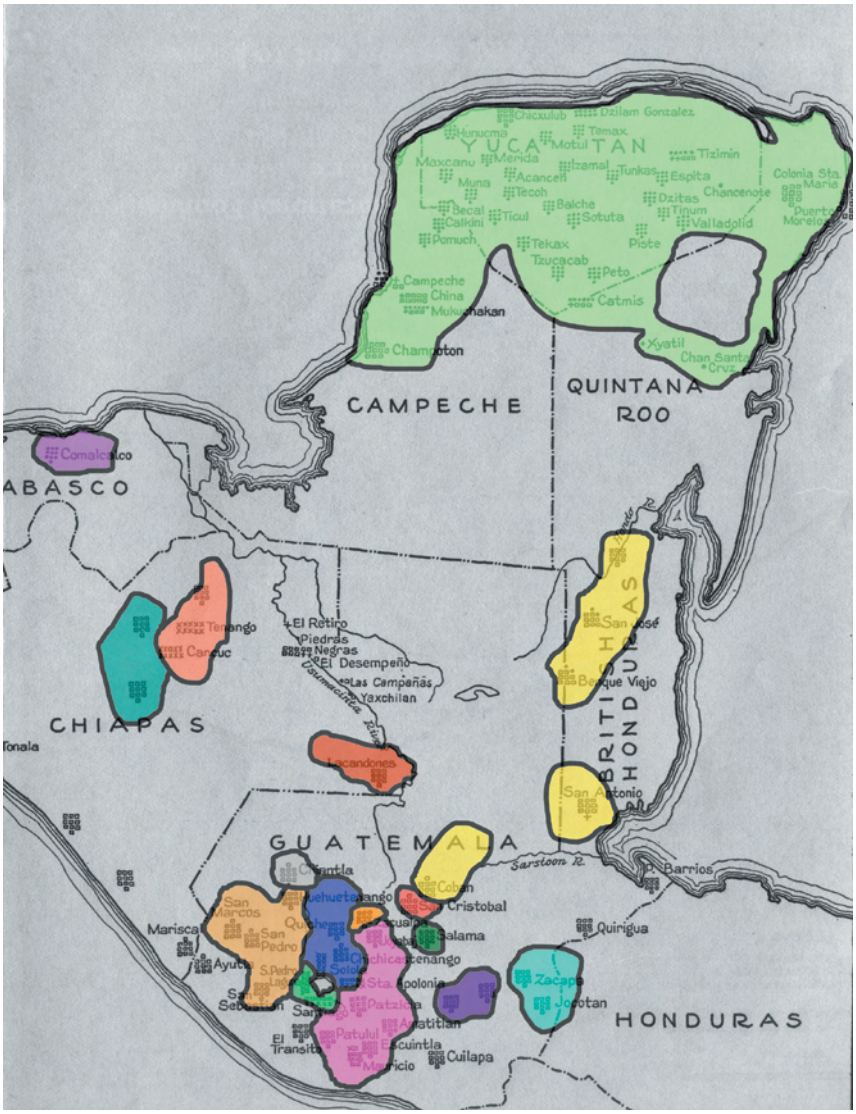

FIGURE 1.6: The eight Maya language groups documented by Robert Wauchope in 1934. Source: Wauchope, p.19 (1938).

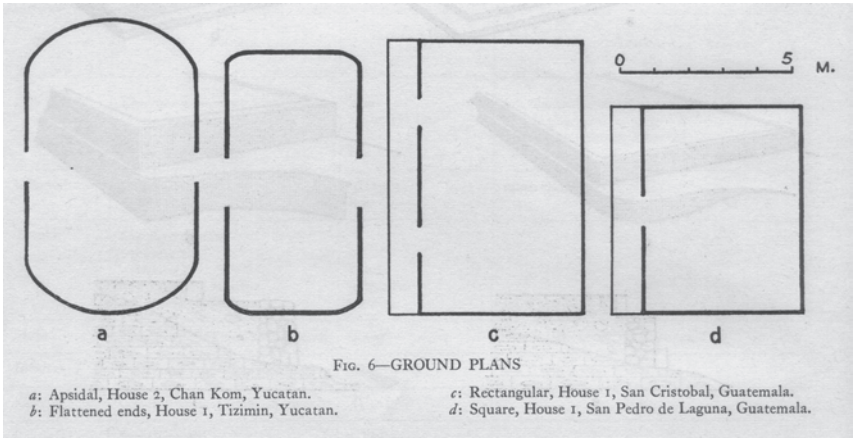

FIGURE 1.7: The four common plan forms documented by Wauchope in 1934, note the lack of circular plans. Source: Wauchope, p.18 (1938).

for his ethnoarchaeological examination related to the resemblance between traditional *casas de paja* and other pre-Columbian artefacts such as prehistoric frescoes and architectural decorations.[13] Ethnoarchaeology is the study of present Indigenous lifeways to enable archaeological deciphering of past comparable settlements.

Travelling through Guatemala, Mexico and Belize on horseback in 1934, Wauchope's research methodology focussed on documenting the physical form of abandoned Maya houses in order to investigate: how dwellings perished over time; how the remains of house-framing and wall constructions could be identified from those remains; and how one could determine the extent of the original house plan after the house had perished. He also gathered information on methods of construction, linguistic associations of the house and patterns of domiciliary behaviour, kinship and social organisation, geographical distribution of floor plans and numbers of specific house configurations on a regional scale.[14]

Modern Maya Houses is divided into eight chapters categorised according to foundational features (substructures and floor plans), house framing methods (principles and elements of construction), wall construction (types, positions and finishes), extraneous features (doors, windows and porches), thatch (material types, location, durability and decoration), interiors and furniture, and miscellaneous property (beehives, chicken shelters, gardens, granaries, kitchens, ovens, shrines, storehouses, sweat-bath shelters, and others). He presents specific non-material aspects related to the Maya house including communal labour and ownership, beliefs about timber use, kinship relationships, and house ceremonies. Over nine months, Wauchope travelled to 38 communities in Guatemala, four in Belize, ten in Chiapas, one in Tabasco, and 38 in the Yucatan Peninsula of southern Mexico. His documentation covers ten houses among six Maya languages – Yukatek, Pokomchi', Ch'orti', Tz'utujil, Kaqchikel, Mam, and Kekchi' – categorised according to plan form and wall type (Figure 1.6). A number of scholars have since proclaimed the importance of Wauchope's ethnography to the field of archaeology.[15]

In documenting house numbers and types in each community, Wauchope draws attention to a number of important regional characteristics. For instance, he identifies four main floor plan configurations (Figure 1.7), which consisting of square, rectangular, apsidal (rectangular with rounded ends), and flattened ends (rectangular with small rounded corners). Other important observations were that the predominant form of *casas de paja* in Guatemala is rectangular with only the Tz'utujil area of Lake Atitlán exhibiting both square and rectangular plan forms. Wauchope illustrates that square houses predominated to the north in the Tzotzil and Tzeltal areas of Tenango and Cancuc in Chiapas, Mexico, while the apsidal plan form was the dominant form among the Yukatek of the Yucatan Peninsula. Examples of flattened end houses were found in the Yukatek region, which also boasted the greatest

FIGURE 1.8: Geographical distribution of house floor plans in Mesoamerica in the 1930s, including the Maya region. Source: Wauchope, p.19 (1938).

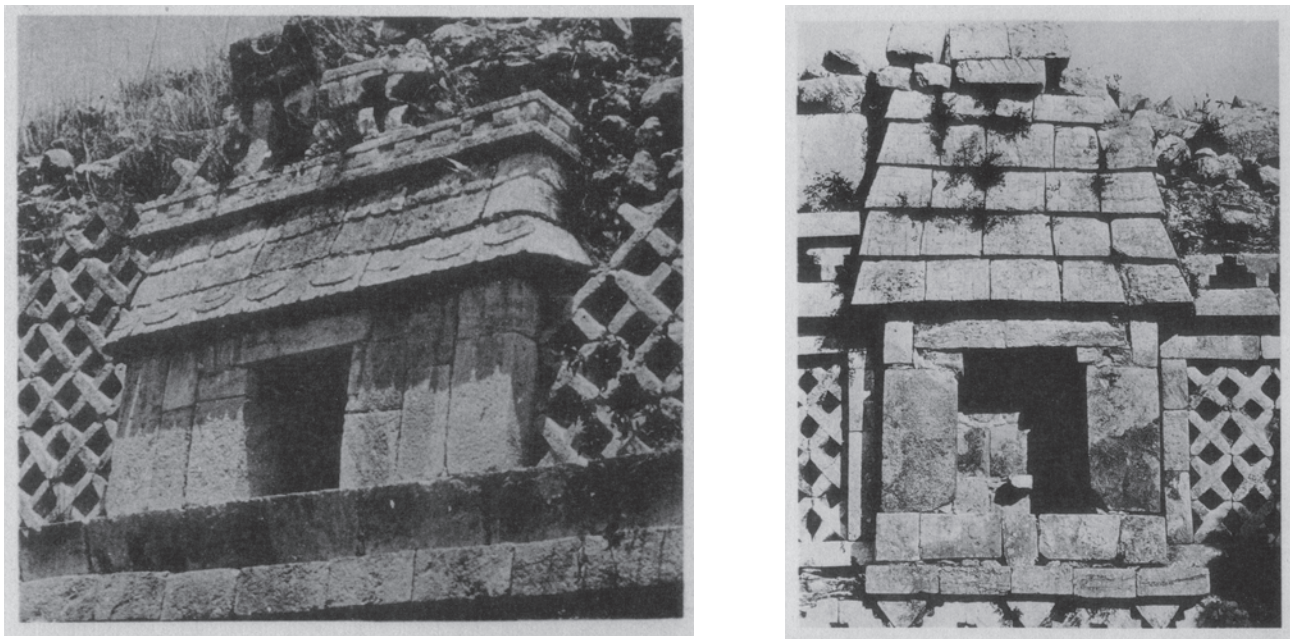

FIGURE 1.9: Carved stone facades at Uxmal and Labna, two Classic-era Maya temple and palace complexes from the Yucatan region in Mexico. Both depict similar house forms to those traditional Yukatek houses still in existence in the study region today. Source: Wauchope, Plate 15 (1938).

variation of wall construction types. He found no evidence of round structures in the Maya realm, which is interesting considering the circular houses evident in other regions of Mesoamerica at the time (Figure 1.8).[16] In concluding *Modern Maya Houses*, Wauchope discusses the regional distribution of plan forms, the connection between the evolution of house and temple architecture and gives recommendations for future excavations. Due to its narrow focus, his investigation did not survey the remaining 21 Maya language groups and their associated house architectures. Comparative analysis between groups focused more on the physical properties of house construction and less on the social behaviours and beliefs generating those architectural responses.

Until the current investigation, the publication in 1938 of *Modern Maya Houses* provided the most comprehensive regional account of Maya *casas de paja* and domiciliary patterns in academic history, and as Gonlin suggests is quite possibly the only ethnoarchaeological study to provide evidence of a direct continuity with pre-Columbian Maya house architectures.[17]

Research Aims

In recognition of the fact that Wauchope's regional house survey remains incomplete, the primary aim of this thesis is to ethnographically record the remaining Maya house architectures and investigate the processes and influences of their architectural transformation in the 70 years since Wauchope's survey in contributing to a cross-cultural understanding and theory of architecture. The value in this approach relates to the lessons to be learned from a longitudinal study of the transformation and change to Maya house traditions for the future of all human architectures. This said, the primary aim of the thesis can be broken into three separate sub-aims: 1) record the remaining Maya house architectures; 2) investigate the processes and influences of architectural transformation and change in the 70 years since Wauchope's original investigation and; and 3) analyse the outcomes of sub-aims 1 and 2 in contributing to a cross-cultural understanding and unified interdisciplinary theory of architecture in moving toward a greater acceptance of human needs in creating future social, cultural and built environments. These sub-aims can be broken into a series of research questions which are set out below and guide the research outline, methodology, and content of individual chapters.

Research Questions (Sub-Aim 1): Salvage Ethnography of an Architectural Tradition

In building on Wauchope's investigation, the following research questions provide the foundation for the salvage ethnography of Maya *casas de paja*. These questions are addressed in Chapters 4, 5, and 6 and need to be read in conjunction with the ethnographic material presented in the Appendices:

What does the pre-Columbian Maya house tradition entail?

Are houses language-specific as suggested in Wauchope's work?

Apart from the 12 recorded by Wauchope, how many other pre-Columbian Maya houses are there?

What architectural properties are regional, kin, familial, and/or individually-related?

Why are there only square and rectangular plan shapes in the Maya region?

What are the commonalities and differences in the range of pre-Columbian house forms?

What are the common domiciliary configurations in pre-Columbian house traditions?

What specific cultural and social properties underlie these house form patterns?

Does house architecture solely respond to environmental criteria?

Is a structuralist reading of Maya house architecture possible?

What does a comparative analysis of Maya house architectures suggest about Maya peoples?

Research Questions (Sub-Aim 2): An Ethnography of an Architectural Change

The following research questions provide the foundation for an understanding of the processes and influences underscoring architectural transformation and change in the 70 years since the publication of *Modern Maya Houses*; these questions are addressed in Chapter 7:

What transformations and changes to Maya house architectures have occurred since Wauchope's time?

What are the reasons underlying this change?

Are pre-Columbian architectural elements and approaches evident in 'modern' Maya houses?

Are pre-Columbian beliefs evident in the construction of 'modern' Maya houses?

Is it possible to track Maya cultural and social evolution in architecture through time?

Have Euromerican models of 'house' affected change in traditional Maya house architectures?

What does this signify for the future of Maya built environments?

Research Questions (Sub-Aim 3): Contributing to Cross-cultural Architectural Theory

The following research questions establish the framework for an analysis of the results of sub-aims 1 and 2 in contributing to a cross-cultural understanding and theory of architecture, and are addressed in Chapter 8:

What contribution can the study of Maya house architectures and traditions make to architectural theory and the broader body of knowledge?

Where is this research field positioned in relation to wider architectural theory?

What is the history of this particular course of study in architectural discourse?

Is there value in researching non-Euromerican traditional architectures in a cross-cultural setting?

Research Field

This thesis is cross-disciplinary, and is situated within the research field of 'architectural anthropology' (AA) in the realm of 'vernacular architecture studies' (VAS). Architectural anthropology is viewed as a sub-theory of Environment-Behaviour Studies (EBS), which itself draws on the field of People-Environment Relations (PER) within the discipline of anthropology. The etymological derivation and epistemological domain of VAS is discussed in greater detail in Chapter 2 which illustrates the narrowing of concepts from PER, through EBS, concerning built and unbuilt environments, toward a practical understanding of architecture through anthropology. Following Amerlinck in *Architectural Anthropology,* the approach in distinguishing architectural anthropology as a specialised interdisciplinary field within EBS, lies in being able to narrow the scope of the investigation to the significance of built and constructed environments only.[18] By positioning the thesis in this manner, the inter-disciplinarity of the thesis can allow for a greater utilisation of anthropological concepts and methods in understanding architectural phenomena. Amerlinck states that architectural anthropology is a "conceptualization for an anthropological approach to architecture (that is, to built forms and to the built environment) that stresses much more than the cultural dimension of buildings and settlements; it emphasizes the need to relate built spaces and places to all possible synchronic and diachronic aspects of human life, including its evolution."[19]

The decision to choose architectural anthropology (or conversely anthropological architecture) as the conceptual approach for this thesis arose as a response to initial experiences during fieldwork. The author found that the conceptual tools and methods learnt during undergraduate architectural education were not sufficient to complete the aims of cross-cultural research at that early stage. It was deemed that a greater knowledge of anthropological concepts and methods was necessary to appropriately carry out the research. In working in a cross-cultural context, it was important for the author-architect understand the varying approaches to interviewing techniques, the politics of participant observation, etic and emic distinctions, and related theoretical concepts in addition to the theory of architecture, which in the majority of Euromerican academic settings is heavily focused on its own architecture tradition and history. In bringing anthropology and architecture together, the author was better equipped to understand constructed and composed environments as well as their related human and cultural conditions. In commenting on the cross-disciplinary relationship between architecture and anthropology, Rostas in "The Dance of Architecture: From Ritualisation to Performativity...And Back Again?" states:

> Architects on the whole have been more interested in anthropology than vice versa; they are aware that there may be something to be learnt from how other societies conceptualise built space and/or their relationship to the spaces they inhabit. The anthropologist's interest in space, on the other hand, is relational and contextual: it is in the space of practice rather than those spaces that have been physically framed by constructions; although the two may coincide.[20]

For an architect working in a cross-cultural context, there was tangible value in moving beyond the conceptual realm of commonly understood Euromerican academic architectural theory. An anthropological approach to architecture examines architectural phenomena in a broader sense, relating to the entire compendium of human constructed endeavours and social evolution.[21] For example, there is no need for the exclusion of non-Euromerican architecture traditions from the world canon of architecture; for example, a Maya *casa de paja* in Guatemala can be viewed in terms of its historical socio-cultural context in the same unbiased manner as St. Peters Basilica in Rome; both are human constructions which represent the historical, social, and political situations in which they were conceived. Architectural anthropology enables a democratisation of the world architectural record. Egenter, an architectural anthropologist states:

> Conventionally, architecture as a design-discipline has not engaged in scientific research. Architectural theory was left to the art historian, who bases his science on aesthetic principles and thus distinguishes 'high architecture' from mere buildings. This sounds rather like a zoologist who would only care for beautiful animals! This fundamentally aesthetical philosophy prevented the scientific dimension of what in fact falls within the field of competence of architectural theory. Object research was prejudiced from the start! Although, as human beings, architecture concerns us all today, no attempt has been made so far to define it scientifically in its anthropological dimensions.[22]

Principles of architectural anthropology have informed both the theoretical framework (Chapter 2) and research methodologies (Chapter 3) of this thesis, and in turn, authorises an anthropological architecture through ethnoarchaeology and ethnography.

Research Contribution

This thesis aims to make an original contribution to the disciplines of archaeology, anthropology and architecture in providing the most definitive regional comparative survey of Maya house traditions ever undertaken. As these architectures inevitably change, the recording of *casas de paja* will inform future research into Maya built environments as well as benefit future generations of Maya peoples. In the 70 years since Wauchope's original investigation, the majority of information on Maya architecture has been 'elite-centric' and dedicated to pre-Columbian temple and palaces complexes, in relying on the interpretation of archaeological evidence and 16th Century ethno-historical accounts. As Sheets points out "The traditional bias of archaeology was to excavate the visually spectacular artefacts, architecture, and art, and that bias still exists... Our knowledge of the Maya is "top-heavy,"

and we need to know more about the vast majority of the population, the commoners."[23] Amid the constructs of contemporary architectural transformation, the present study provides an invaluable addition to the body of knowledge surrounding past and present Maya cultural history. For the first time, a concise explanation of common threads and underlying significances of house architectural forms is explained, proving that although under threat, Maya *casas de paja* have a story to tell future generations.

In 1998, Houston in *Function and Meaning in Classic Maya Architecture* urged for the preparation of a "comprehensive survey or atlas of indigenous Maya buildings" which extends Wauchope's original 1930s survey through greater "descriptive rigor and theoretical sophistication".[24] Arguably, the current research has gone some way to producing this atlas of Maya house traditions. In stating that the significance of such a survey lies in the impermanence of Maya building materials resulting in the disappearance of pre-Columbian knowledge systems, technologies, material usage, labour organisation and house nomenclature,[25] Houston calls for the careful selection of study region, preparation of measured scaled drawings showing structural detail and ancillary structures, and a sensitivity to historical and ethnic setting, and declares that: "If undertaken wisely, [such an ambitious research project] will contribute crucial, contrastive evidence to discussions of traditional architecture."[26]

Chapter Outline

The following chapter outline addresses the stated aims and research objectives. Chapters 2 and 3 present the theoretical background and methodological approach governing the research project while Chapter 4 gives an historical overview of Maya house traditions. Chapters 5 and 6 are devoted to the ethnographic findings of the regional survey and Chapter 7 discusses Maya house change in the years since Wauchope's 1930s investigation. Chapter 8 details the contribution which the ethnographic investigation makes to Euromerican architectural theory in relation to non-Euromerican material and cultural histories in contributing to a world cross-cultural architectural canon and scholarship.

Chapter 2 Theory: Vernacular Architecture Studies

In the broader context of architectural theory as it existed when the research began (2000), this dissertation fell within the realm of what was known as Vernacular Architecture Studies (VAS). In the latter 20th Century, architectural studies of non-Euromerican cultural groups tended to be classified under this broad category aggregating the majority of the world's building traditions. The author found the history of vernacular architecture studies to be a poorly understood area of research within architectural theory with a somewhat dubious past. Chapter 2 presents the theoretical development of VAS relative to the history and theoretical evolution of the discipline of 'architecture' itself. The chapter is a survey of the scholarly landscape of VAS, with all its inadequacies, and identifies those important historical moments defining the evolution of the field of study within the broader context

of architectural history and theory. The chapter also seeks to present the current debate and political significance of the research field of VAS in relation to cross-cultural architectural research.

Chapter 3 Methodology: Towards an Anthropological Architecture

The methodology presented in this chapter was designed to respond to this situation by overlapping the approaches and theoretical boundaries of the disciplines of architecture and anthropology. An interpretive field of inquiry was established to be easily transposed between architecture and anthropology and to be useful to the broader disciplinary fields of Environment-Behaviour Studies and People-Environment Relations. There was great difficulty involved in researching a relatively unknown topic in a study region undergoing dramatic transformations of its built environment, which is now only just rising from the ashes of a 28 year civil war. The complexities of this situation necessitated a non-linear research process, evoking an 'inductive' methodological approach capable of withstanding an evolution of its original aims during empirical analysis.

Chapter 4 A History of Maya House Architectures

This chapter presents the cultural history of the Maya from their origins to the present day, and draws on archaeological evidence and ethno-historical accounts in presenting a parallel history of Maya house traditions and settlement patterns. Consequently, the chapter sets the historical context for the latter discussion of traditional *casas de paja* and associated transformations.

Chapter 5 Pan-Maya Comparisons: Material Significances

In presenting the main findings of the salvage architectural ethnography (ethnoarchaeology), Chapter 5 comparatively analyses the physical forms and associated behaviours of the 27 houses documented during the regional survey. The term 'salvage architectural ethnography' refers to the documentation process whereby traditions were investigated in establishing an historical record of each dwelling. In order to illustrate the diversity and maintenance of traditions contained within the pan-Maya architectural lexicon, the chapter establishes those architectural traits and associated social patterns commonly observed among the Maya houses surveyed. Furthermore, the chapter identifies the common threads to be used as the basis for an analysis and discussion of building 'transformation' in latter chapters of the thesis.

Chapter 6 Pan-Maya Comparisons: Semantic Significances

The ethnoarchaeological project led to the realisation that the architectural products presented in chapter 5 had a semantic affiliation to a pan-Maya belief system. Accordingly, this chapter details the environmental, spiritual, and political significance of meanings inherent in pre-Columbian dwelling forms.

Chapter 7 Maya House Transformations

Whilst undertaking the traditional house survey, and in conjunction with archival and historical searches, the author observed that dramatic building transformation was a relatively recent phenomenon in the study region. In taking Wauchope's 1930s study as a point of departure, the chapter presents the findings of research undertaken in the field to investigate the processes and influences affecting the transformation and change of pre-Columbian house traditions.

Chapter 8 Discussion and Reflections

Chapter 8 presents a discussion arising from the results of the ethnographic agenda which attempts to recast the relationship between the terms 'vernacular' and 'architecture' within the broader architectural canon through knowledge gained of Maya *casas de paja*. Consequently, this chapter addresses the two research themes running through the thesis being: 1) a deeper understanding of the significance of Maya house architectures; and 2) a challenge to the dominant Euromerican architectural tradition when discussing so-called 'vernacular architectures' in a cross-cultural context. Discussion focuses on the politics associated with studying Indigenous building traditions within the wider realm of architectural research; defining architecture as an academic discipline and professional pursuit and the impact this has on the future of Indigenous architectural research. In addition, the chapter utilises the research on *casas de paja* to engage the political processes involved in so-called 'vernacular' architecture research, with the greater goal to develop a useful conceptual and practical framework to facilitate the empowerment of Indigenous peoples through their own customary architectures and built environments.

Appendices: Documentation of Pre-Columbian House Traditions

In conjunction with the results of photographic archival collation and historical literature reviews, the appendices present the measured drawings and photographic recording of pre-Columbian houses as documented during the salvage architectural project.

Endnotes

[1] Lutz, Sanderson, and Scherbov present research which shows, that based on current trends, the world's population will increase from 5.8 billion today to 7.9 billion in 2020 and 10.0 billion in 2050. See W. Lutz, W. Sanderson, and S. Scherbov, "Doubling of World Population Unlikely " *Nature* 387 (1997): 803-05.

[2] L. Asquith and M. Vellinga, eds., *Vernacular Architecture in the Twenty-First Century: Theory, Education and Practice* (New York: Taylor and Francis, 2006).

[3] U. Kultermann, *Architecture in the 20th Century* (New York: Van Nostrand Reinhold, 1993), 249.

[4] A Rapoport, *House Form and Culture*, Foundations of Cultural Geography Series (New Jersey: Prentice-Hall Inc, 1969).

[5] Ibid., 129.

[6] M. Davis, *Planet of Slums* (London: Verso, 2006), 1.

[7] http://news.bbc.co.uk/2/hi/business/7583719.stm Accessed 13 June 2009.

[8] T. Kaufman, *Idiomas De Mesoamérica* (Guatemala: José de Pineda Ibarra, 1974), 85.

[9] Kaufman's dates are viewed as controversial by some for they relied on what are now believed to be debatable methods in historical linguistics (Houston 2009: Personal Communication). In saying this, the dates themselves are not completely relevant to the thesis argument. Of greater relevance are the historical relationships between language families and migratory patterns which may or may not have happened at the times suggested by Kaufman's chart.

[10] http://www.sil.org/linguistics/ Accessed at 2:46pm on Sunday 27 May 2007.

[11] See R. Wauchope, *House Mounds of Uaxactun , Guatemala*, vol. Publication 436 (Washington D.C.: Carnegie Institution of Washington, 1932). Wauchope conducted this study because of excavations by Ricketson at Uaxactun; this was also the time in the US of greater interest in "vernacular" cultures, as sponsored by the Works Progress Administration (WPA) and Smithsonian programs (Houston 2009: Personal Communication).

[12] ———, *Modern Maya Houses: A Study of Their Archaeological Significance* (Washington D.C.: Carnegie Institution of Washington, 1938), 1.

[13] Ibid.

[14] Ibid.

[15] N. Gonlin, *Rural Household Archaeology at Copan, Honduras*, PhD Dissertation ed. (State College: Department of Anthropology, The Graduate School, The Pennsylvania State University, 1993), 19.

[16] Ibid., 25. For examples of round dwellings in neighbouring areas to the Maya, see F. Starr, *Indians of Southern Mexico: An Ethnographic Album* (Chicago: University of Chicago Press, 1899).

[17] See Gonlin, *Rural Household Archaeology at Copan, Honduras*.; R. J. Sharer, *The Ancient Maya*, 5th ed. (California: Stanford University Press, 1994).; and P.D. Sheets, *The Ceren Site: A Prehistoric Village Buried by Volcanic Ash in Central America*, ed. Jeffrey Quilter, Case Studies in Archaeology Series (New York: Harcourt Brace College Publishers, 1992).

[18] M-J. Amerlinck, "The Meaning and Scope of Architectural Anthropology," in *Architectural Anthropology*, ed. M-J. Amerlinck (Westport: Bergin & Garvey, 2001), 15.

[19] Ibid., 5.

[20] S. Rostas, "The Dance of Architecture: From Ritualisation to Performativity...And Back Again?," *Architectural Design* 66 (1996): 19-21.

[21] M-J. Amerlinck, ed., *Architectural Anthropology* (Westport: Bergin & Garvey, 2001).

[22] N. Egenter, *The Present Relevance of the Primitive in Architecture* (Zurich: Structura Mundi Editions, 1992), 147.

[23] Sheets, *The Ceren Site: A Prehistoric Village Buried by Volcanic Ash in Central America*, xi.

[24] S.D. Houston, "Finding Function and Meaning in Classic Maya Architecture," in *Function and Meaning in Classic Maya Architecture*, ed. S.D. Houston (Washington D.C.: Dumbarton Oaks, 1998), 528.

[25] Ibid.

[26] Ibid.

II
The History & Theory of VAS

This dissertation falls within the broader context of architectural theory in the realm of what is currently known as vernacular architecture studies (VAS). This chapter aims to present the theoretical development of VAS in relation to the historical and theoretical evolution of the discipline of 'architecture' itself, and in relation to the 20th Century development of fields like cultural geography and anthropology. In summation, the chapter is an historiography of the scholarly landscape of vernacular architecture, pausing only to identify those critical moments in the broad development of VAS theory. As such, the chapter is structured according to two main historical periods, pre and post-20th Century, identified as significant in the evolution and definition of VAS. Beginning with the origins of the Euroamerican architecture tradition, the chapter proceeds by drawing on references to 'vernacular' architectures from the European Renaissance of the 16th Century, the 19th Century Gothic Revival and Arts and Crafts movements, the 20th Century Modern movement, and ends with a discussion of VAS in the 21st Century. The selection of these specific periods for theoretical analysis relates to a number of criteria drawn out of the compilation of an extensive literature review relating to the reference of vernacular architecture as a direct or indirect source for architectural thought.[1] Consequently, the chapter establishes the epistemological foundation for the theoretical analysis of Maya *casas de paja* occurring in the latter chapters of this dissertation, and presents what may be the beginnings of a unified theory of cross-cultural architectural practice.

Defining Vernacular Architecture

In seeking to define 'vernacular architecture', it is instructive to examine the term's interesting etymology. Firstly, the English word 'architecture' is based on the Latin *architectura*, which itself is derived from the Greek *arkhitekton*, an amalgam of *archos*, chief, and *tekton*, builder – the master builder.[2] As a working definition, this thesis takes the *Oxford English Dictionary* definition of 'architecture' as: "The art or science of building or constructing edifices of any kind for human use."[3] In comparison, the term 'vernacular' also derives from the Latin *vernaculus* signifying the language of the commoner,[4] or the common language, which found its origins in the ancient Etruscan word *verna* meaning home-born slave or native.[5] Taken literally, 'vernacular architecture' is therefore 'the architecture of the commoner', or 'commoner-architecture'. In one of the most authoritative treatises on the subject, Paul Oliver in *The Vernacular House Worldwide* defines 'vernacular architecture' as:

> ...comprising the dwellings and all other buildings of the people. Related to their environmental contexts and available resources they are customarily owner- or community- built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of life of the cultures that produce them. To which could be added that 'they may be adapted or developed over time as needs and circumstances change.' For more convenient use the importance of self-help or community-based building is emphasized in the simple definition of the vernacular as 'the architecture of the people, and by the people, but not for the people.' In making this distinction it

> is contended that 'popular architecture' designed by professional architects or commercial builders for popular use, does not come within the compass of the vernacular. Suburban housing estates are popular – but they are not vernacular.[6]

One of the major distinctions in Oliver's definition above is vernacular architecture's 'otherness' in relation to the epistemological domain of 'popular' or 'high-style' architecture (referred to as 'capital-A' architecture herewith) designed by 'professional' architects.[7] The categorisation and conception of vernacular architecture studies has paralleled the evolution of architectural theory itself. Another prescription to 'vernacular' is that it is "concerned with ordinary domestic and functional buildings rather than the essentially monumental."[8] However the definition of architecture is not without its etymological issues, as Lethaby in 1929 states: "No satisfactory definition has ever been given of the word architecture, and yet when we use it every one knows what we mean…We cannot reach any satisfactory definition of architecture on the principle that architecture is good building, and building itself is bad building - it embodies an absurdity."[9] In accordance with the main aims of this chapter, and thesis in general, this definitional problem is revisited in the latter stages of this chapter, and then re-examined in its entirety in the thesis conclusion (Chapter 8) in order to illustrate the broader significance, and contribution, research into Maya house architectures makes to Euroamerican architectural theory in general.

Origins of VAS within the Euroamerican Architecture Tradition

The enculturation process for any student of architecture in the Euroamerican (Western) tradition normally begins with the work of Roman architect-engineer Marcus Vitruvius Pollio (ca.70-25 B.C.). In 23 B.C., Vitruvius wrote a treatise on architecture called *de architectura* and dedicated it to the Roman Emperor Augustus. Being the earliest surviving theoretical account of architecture, *de architectura* is the foundation-stone for the Euroamerican architectural theory tradition. Since its original publication, Vitruvian theory has proven vastly influential with many architectural theoreticians and practitioners having used *de architectura* as the basis for their own treatises on architecture.[10] *De architectura*, itself looks back to the architectural and engineering achievements of the Greeks and Etruscans. "Vitruvius admired in particular the design of Hellenistic temples, which represented for him the perfect union of geometry, measure, and proportion – qualities and characteristics which mirrored, or so he reasoned, the beauty found in nature and in the human body."[11]

Comprising ten 'books' on architecture, *de architectura* sets out a discernible formulation and order for the practice of architecture in the first century B.C. Vitruvius begins in Book I by defining 'architect' and 'architecture'; in Book II he sets out the origins of architecture as well as construction methods and material usage; Books III and IV Vitruvius discusses the relationship of architecture to the human body and the significance of the three architectural orders – Doric, Ionic, and Corinthian; Book V

deals with public building design; Books VI and VII pertain to domestic architecture; and Books VIII, IX and X discuss the practicalities of infrastructure design, cosmology, and machinery. Vitruvius' contemporary status lies in the determination of three fundamental principles of architecture as *firmitatis, utilitatis,* and *venustatis*[12] translated as 'firmness', 'commodity' and 'delight' respectively. In Book I, he defines the architect and architecture further, incorporating the encoding of meaning in architectural practice as a key dimension:

> In all matters, but particularly in architecture, there are these two points: the thing signified, and that which gives it significance…It appears, then, that one who professes himself an architect should be well versed in both directions…Let him be educated, skilful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinion of the jurists, and be acquainted with astronomy and the theory of the heavens.[13]

Vitruvius commences Book II with a discussion of the origins of architecture and states that architecture was the phenomenon that separated 'modern man' from the 'wild beasts of old'.[14] He presents the Roman house of 23 B.C. as an evolution of dwelling forms of the original beastlike humans who 'discovered' shelter and the use of fire through accident and the observance of natural forces, and posited that it was the discovery of fire that "originally gave rise to the coming together of men, to the deliberative assembly, and to social intercourse".[15] According to Vitruvius, humans began to construct shelters, initially in caves, and finally as the imitation of the bird's nest out of twigs and mud, applied this process, eventually leading to the construction of "better and better kinds of huts as time went on."[16] Through a greater understanding of materials and a pursuit for "higher ideas born of the multiplication of the arts", he explains that humans gave up huts and "began to build houses with foundations, having brick or stone walls, and roofs of timber and tiles; next, observation and application led them from fluctuating and indefinite conceptions to definite rules of symmetry."[17] Vitruvius argues that this eventually led to the development of the fundamental principles of Firmness, Commodity and Delight, and thus Architecture was born.

For Cesar Augustus' benefit, Vitruvius writes: "That houses originated as I have written above, we can see for ourselves from the buildings that are to this day constructed of like materials by foreign tribes: for instance in Gaul, Spain, Portugal, and Aquitaine, roofed with oak shingles or thatched."[18] This statement illustrates the geo-political context of the day, which as far as the current author can determine, is the first recorded instance whereby political issues are raised in regards to architecture, as modern, and traditional thatch constructions, as past. Not only did the modest hut "of old times" serve as a perfect example for the distinction between 'modern Roman man' (23 B.C.) and a "rude and barbarous mode of life" but it enabled a distinction to be drawn between foreign 'barbarians' and the Roman Empire of the day.

European Renaissance: Classic Past vs Vernacular Modern

Architectural history shows the next major theoretical addition to the canon of Euroamerican architectural discourse coincided with the beginning of the Early Modern or Renaissance Period (1400s-1600s A.D.) in Western history. With the term itself deriving from the Latin *re-nascere*, to be re-born, the Renaissance Period coincided with the end of the European Middle Ages (500-1400 A.D.), the rise of European nation-states, the Reformation of Christianity, and the beginning of five hundred years of European cultural expansion and global domination. The European cultural expansion to other areas of the world (such as the Americas) was an economic windfall initially to the Spanish and Portuguese, and indirectly the Italians, who although not conquerors themselves were the merchants for Europe. Thus, monies from the invasion of the Americas ended up funding the Italian cultural renaissance, resulting in the development of critical architectural thought.

This cultural renaissance of the 15th Century resulted in the rediscovery of Vitruvian thought in 1414 A.D. when the Italian antiquarian Gian Francesco Poggio Bracciolini (1380-1459) located a copy of *de architectura* in the library of the medieval Abbey of St. Gall. While Bracciolini discovered the book, Italian architect Leon Battista Alberti (1404-1472) is credited with its reintroduction into Euroamerican architectural theory. In 1450, Alberti wrote the first printed book on architecture, *De Re Aedificatoria* (On the Art of Building),[19] and reminiscent of Vitruvius' classic, Alberti's *Ten Books on Architecture* sets out to establish a new way of building which reflects its 15th Century historical and cultural context.[20] In doing so, he uses examples of his own 'modern' work to illustrate how buildings should be purpose built rather than simple replicas of Roman and Greek classical antiquity.[21] The success of *De Re Aedificatoria*, and a number of built commissions, has resulted in Alberti being regarded as one of the most famous proponents of neo-classical architecture in the Renaissance period.[22]

Some 20 years after the publication of *De Re Aedificatoria*, Alberti completed the restoration of the facade of the Santa Maria Novella (1458-1470) basilica in Florence. In combining Greek classical proportions with local Florentine architectural traditions, the façade of the Santa Maria Novella represented Alberti's theory of a new Renaissance architecture. Through the use of local building traditions, the restoration of the Santa Maria Novella also presented Alberti's position on a much debated subject of the time – whether or not it was acceptable to theorise classical architecture in the non-Latin vernacular of Florentine and vice versa.[23] This etymological discussion led to questions of architectural style whereby Latin was associated with Classical architecture, as the ancient, and Florentine building traditions were the 'modern' vernacular. Alberti's interest in the vernacular related to his concern in the study of the human condition and its relationship to architecture as a point of difference and modernity, as opposed to the imitation of classical proportions and the passing traditions of Antiquity.[24]

In the Santa Maria Novella, Alberti not only emphasised the value of past classical traditions, but also the importance of Florentine (we now call them vernacular) architectural traditions in bringing his new architecture closer to the human condition of the day. As Borsi in *Leon Battista Alberti* states: "The dignifying of the vernacular through the *studia humanitatis* and the ennobling of architecture through the study of classical models were merely different aspects of a single endeavour."[25] Alberti is not only responsible for the reintroduction of Vitruvius' work into contemporary architectural theory, but also for his humanist approach to the utilisation of medieval 'vernacular' building traditions, as the modern, in 15th Century Renaissance architecture. He challenged and expanded Vitruvius' work by proposing what architecture could be, rather than imitating and repeating what it was from the past; and saw value in synthesising Vitruvian classical principles with local Florentine 'vernacular' building traditions. In a similar manner to Alberti, the Italian architectural theorist Sebastiano Serlio wrote a treatise in entitled *Tutte l'opere d'architettura*, which also called for the synthesis of vernacular design principles in governing proportion and form in Renaissance architecture.[26]

19th Century Gothic Revival: The Dawn of VAS

In a similar manner to Alberti's treatise 400 years earlier, and inspired by the theory and practice of Augustus Welby Pugin (1812-1852), the Gothic Revival period was a reaction to the imitation of classical Greek and Roman architectural forms of the Neoclassical period so prevalent in England, Europe and the United States in the 1800s. In searching for a 'true' 19th Century architecture, Pugin, a devout Catholic, saw the rise of Neo-Classical architecture as a further "decay of true Christian principles" and sought to bring about a return to the 'architectural excellence' of the medieval Gothic architecture erected prior to the Protestant Reformation in England and Europe.[27] In his book *Contrasts*, Pugin, like Alberti and others before him, is attempting to reconfigure the definition and representation of architecture to bring a new order to English architecture and revive the Catholic cause in Protestant England. Prior to the publication of *Contrasts*, a number of influential works on medieval 'architecture' existed in both the French and English traditions, devoted most notably to churches and cathedrals.[28] Writing in *Contrasts*, Pugin criticises the imitation of 'pagan' Classical styles of architecture as 'modern degeneracy' stating that "the architecture of the nineteenth century is that extraordinary conglomeration of classic and modern styles peculiar to the day, and of which we can find no example in any antecedent period."[29]

Along with Pugin, proponents of the Gothic Revival called for the reintroduction of medieval architecture and construction techniques that exemplified a truth to materials, a human enjoyment in the making of architecture, and a respect for local building traditions and histories.[30] Pugin writes: "On comparing the Architectural Works of the last three Centuries with those of the Middle Ages [the Gothic], the wonderful superiority of the latter must strike every attentive observer..."[31]. The

development of Pugin's theory must be viewed within its historical context as the synthesis of architectural ideas being widely discussed in Europe at the time. Of particular interest to the history of architectural theory and vernacular studies was the analogy relating architecture to language.[32] At the time, theoreticians were debating whether or not it was useful to think of architectural 'style' in relation to 'language'.[33] According to Collins in *Changing Ideals in Modern Architecture*, the style/language debate in architecture was sparked by Dr Samuel Johnson's preface to *Shakespeare* in 1765, which centred on the virtues of using vernacular forms of language in Shakespearean works.[34] He states:

> If there be, what I believe there is, in every nation, a stile which never becomes obsolete, a certain mode of phraseology so consonant and congenial to the analogy and principles of its respective language as to remain settled and unaltered; this style is probably to be sought in the common intercourse of life, among those who speak only to be understood, without ambition of elegance.[35]

This Shakespearian appreciation for the use of common language in the arts eventually led to a greater academic interest in folk building traditions in architecture, taken to be signifiers of an 'authentic' 'true' architecture of its time, as compared to the overtly 'stylistic' classical architecture of the past. Consequently, the questioning of an 'authentic' English style in architecture led to a critical interest in domestic architecture, finding its way into the Gothic Revival through the publication in 1797 of John Thomas Smith's *Remarks on Rural Scenery*. Smith's picturesque study of the 'humble' English cottage is quite possibly the earliest recording of English vernacular architecture. While others were contemplating the 'heroic' monuments of the classics and their relationship to the architecture of the day, Smith's work draws attention to the significance of the 'humble' English cottage as an inspiration for the architectural identity crisis of the times. He writes:

> Of all picturesque subjects, the *English cottage* seems to have obtained the least share of particular notice and appropriate discriminations by modern *tourists*…and this, it should seem, merely because, though of equal excellence in the scale of picturesque beauty, that beauty happens not to be of the *heroic* or sublime order: It seems not to have been sufficiently considered that the landscape-painter's beauty does not necessarily exist in grandeur, *exclusively* or *alone*; but equally pervading *every* department of Nature, is found not less perfect in the most *humble* than in the most *stately* structures, or scenery.[36]

Debate over style and language in architecture continued during the Gothic-revival period, eventually coalescing in a public debate in 1842 between Professor Donaldson of the University College of London, and Professor William Hosking of King's College London.[37] Donaldson opened the debate when he claimed that like the traveller "who is master of several languages finds himself at home and at ease among the people with whose language he is familiar, so the architect who can command the majesty of the Classic styles, the sublimity of Gothic, the grace of the Revival or the brilliant

fancies of Arabic is the more fitted for the emergencies of his difficult career."[38] Hosking, in rejecting Donaldson's eclectic approach, stated: "In truth, each particular style may be considered as a distinct and peculiar language; and as in the case of a language, before a man can compose in it he must not only learn to speak and to read it, but to think in it. Where is the architect who can use with truth and freedom all the various styles of architecture?"[39]

The publication of Sir George Gilbert Scott's *Remarks on Secular and Domestic Architecture, Present & Future* was another watershed moment in the history of vernacular architecture studies. Like Pugin, Gilbert Scott was a serious advocate of the Gothic revival in architecture. The importance of his work to the neo-Gothic was to advocate for the democratisation of Gothic-inspired architecture across the entire English architectural canon, both public and domestic.[40] Gilbert Scott was also the first to link the linguistic term 'vernacular' with architecture, aiming "not at a dead antiquarian revival, but at developing upon the basis of the indigenous architecture of our own country, a style which will be pre-eminently that of our own age."[41]

At the same time Pugin and Gilbert Scott were refining their architectural theories in London, the theory and practice of French architect and fellow Gothic-revivalist, Eugéne Emmanuel Viollet-le-Duc (1814-1879) came to prominence in mainland Europe. While in residence in London during the 1850s, and possibly influenced by the very public debate on architectural style at the time, Viollet-le-Duc began working on *The Habitations of Man in All Ages*, an historical survey of the domestic architecture of many of the world's known cultures in the 19th Century. Of relevance to the history of vernacular architecture studies, Viollet-le-Duc describes the origins, modes of construction, physical appearance, and related social behaviours of the groups under question. In what may be the first cross-cultural architectural study, Le-Duc begins *Habitations* in a similar manner to Vitruvius' *de architectura* by exploring the evolution of the human dwelling from an initial tree shelter to the supposed beginnings of architecture with the first 'tree' hut. He continues by comparing the varying domestic architectural histories of the ancient Arya people of the Indus region of Pakistan; the nomadic desert tribes of central Asia; the classical Egyptians of the Nile Delta; the nomadic Semite tribes and ancient Assyrian peoples of western Asia; the Pelasgians, Carians, Ionians, Lycians, and Hellenes of ancient Greece; the ancient Romans of Italy; the Buddhist Indians; the Nahuas and Toltecs of ancient America; the Scandinavians, Merovingians, Saracens and Carlovingians of old Europe; and finishes by discussing the differences between Medieval and Renaissance domestic architecture in Europe between the 11th and 16th Centuries.

The purpose of *Habitations* was to add weight to Viollet-le-Duc's Gothic-revival argument regarding the respect for one's own architectural traditions versus the emulation of the architectural traditions of other's (such as 19th Century Neo-Classicism).[42] Bucknall, the English translator of *Habitations*

states that Viollet-le-Duc's extensive architectural survey brings into prominence "the fact that it is impossible for man to forget his past; and that just as the incidents of childhood make the most lasting impression upon the memory of the individual, and early habits affect his whole career, so does tradition - which is the memory of a people - perpetuate those habits and methods which necessity or predisposition induced in its infancy."[43]

Gottfried Semper: Architect & Ethnographer

At the time French and English architects were advocating the return to medieval types and principles of architecture in England, a different path for 'modern' architecture was being proposed in Germany. In 1851, while residing in London, the German architect Semper wrote *The Four Elements of Architecture* which echoed the Anglo neo-Gothic call for an answer to the 'modern' dilemma of the meaning of architecture. Reminiscent of Vitruvius' classical text, Semper devises the four elements, or 'motives' of architecture – hearth, roof, enclosure and mound – from elements of 'barbarian' architectural traditions, and inspired by two sources, both anthropological in nature. The first was the work of the early German anthropologist, Gustav Klemm (1802-1867),[44] who in 1843 published *Allgemeine Cultur-Geschichte der Menschheit* (General Cultural History of Humanity), a detailed survey of the habitats, beliefs, and behaviours of indigenous cultures across Africa, North and South America, and the South Pacific.[45] Klemm's work is now recognised as the first anthropological/ethnographical account of culture.[46] The second source for Semper's theory on architecture was London's Great Exhibition of 1851, where cross-cultural displays of indigenous craft and vestige were on show.[47] Mallgrave in the "Introduction" to Semper's *The Four Elements of Architecture* notes:

> In a second, unpublished manuscript written shortly after the Great Exhibition, Semper noted the confirmation his four-motive theory had received from these displays, and even identified specific exhibits: Maori plaited decorations applied to tools, ships, and houses as fetishes; African grass skirts braided in polychrome patterns; products of Canadian Indians made of animal and vegetable skins and embroidered with colored beads; the Indian hut from Trinidad, whose platform, hearth, spar roof, and mat walls illustrated for Semper the four motives in their simplest combination. By the end of 1851 Semper had found not only the tripartite model for his later theory, but also the conviction that he had penetrated the primeval shroud veiling the origin and meaning of art.[48]

In the wake of success of *The Four Elements*, Semper published another three major works, *Science, Industry and Art* (1851), *Style in the Technical and Tectonic Arts or Practical Aesthetics* (1860), and *On Architectural Styles* (1869). Each publication was an evolution of the theoretical foundation upon the previous. Mallgrave explains that as a practicing architect and theoretician Semper struggled to resolve "whether architecture's *traditional* types, its existing language of forms, must be discarded in a new architectural order, or whether their life can be extended by a process of abstraction carried out

on the existing tradition."[49] History shows that 150 years later, this question is still cause for concern among architects of the present era.

Semper's connection to Klemm's ethnography is possibly the first instance of architectural theory being influenced by cross-cultural material culture studies, and interdisciplinarity. In the mid 1800s, through the work of Klemm and others, the first vestiges of the discipline of anthropology were becoming apparent. By the end of the 19th Century, the field of the cultural tourist/adventurer was evolving into a more refined course of investigation relevant to the study of vernacular architectures. Semper's work illustrates the relevance of this connection to architectural theory, and compared to his contemporaries, he draws from a cross-cultural (both European and non-European) basis for his theory of architecture, whereas Pugin, and others like Gilbert Scott drew from within English architectural traditions for their critical assessments.

Arts & Crafts Vernacular Revival: The Growth of VAS

Through the influential work of art and architecture critic John Ruskin (1819-1900), the mid 19th Century saw the beginnings of a slow evolution of the Gothic Revival. Ruskin, in association with A.W. Pugin and George Gilbert Scott, became an advocate for the Gothic Revival, however, unlike his contemporaries, and possibly because he was not actually an architect but a social critic, Ruskin was not limited by nostalgia for the architectural aesthetics of the Medieval Period.[50] His concern, as outlined in his 1851 seminal work, *The Stones of Venice*, was to draw on the social and religious experiences of the Middle Ages in an effort to propose a new 19th Century architecture. In focusing on architectural 'honesty' Ruskin is less concerned with the mimicry of Gothic architectural types, and more concerned with the social legacy of the medieval period, most notably its Catholic heritage. He is known to have said: "That beauty of form is revealed in organisms which have developed perfectly according to their laws of growth [and give] the appearance of felicitous fulfilment of function."[51]

Ruskin's ideas were to influence architects William Morris (1834-1896) and Phillip Webb (1831-1915), the founders of the late 19th Century British Arts and Crafts movement.[52] Both had well established relationships with the major protagonists of the Gothic Revival, being personal friends of Ruskin, and having worked as architectural assistants in the firm of Gothic Revivalist George Edmund Street (1824-1881), who himself had previously assisted in the office of Sir George Gilbert Scott (a Gothic-revivalist discussed earlier). Through public forums such as published letters and articles, the debate of honesty in architecture through respecting the architectural principles of one's own traditions versus the emulation of the architectural traditions of others continued in British and European architectural circles into the late 19th Century. In terms of the history of vernacular architecture studies, a critical juncture occurred with Reverend J.L. Petit's call to architects at the 1861 Architectural Exhibition in London for an inclusive approach to vernacular architecture, stating:

> We must inquire, then, if there be any style which we may call our own, perfectly suited to the wants of the present day; expressive, or capable of being made expressive, of the spirit of the age; and sufficiently comprehensive to embrace both vernacular and monumental works, and that large class which partakes of both characters. If we would view the matter in its proper light we must go back somewhat more than a century.[53]

Petit became disillusioned with the Gothic Revival "which conformed to types rather than principles" and advocates that the basis of a 'living architecture' of the 19th Century was the 'ordinary' or vernacular architecture of the day.[54] Like others before him, Petit is reacting to a stylistic eclecticism in architecture: "So many of our cheaper structures are built according to the fancy of the architect or his employer, that they cannot be said to represent any national or permanent style whatsoever."[55] His lecture, and subsequent publication in the *The Civil Engineer and Architect's Journal* of 1861, sparked an evolution in Gothic-revivalist architectural theory, which eventually grew into the Vernacular Revival, as it is now called, the foundation for the development of the Arts and Crafts Movement of the late 19th Century in Britain, Europe and North America.

> [Petit]...gave to minor domestic architecture something of the rank formerly restricted to churches, temples, palaces and tombs and related architecture to the everyday world of speech and the vulgar tongue at that, rather than the esoteric worlds of sculpture, painting or poetry. At the same time, William Morris and his colleagues in the Arts and Crafts Movement had been looking back to what they believed had been an age of simple unaffected craftsmanship. Honesty in materials and techniques was held to apply equally to architecture as to the related crafts of furniture making, fabric weaving, glass painting, etc. The result was a style of architecture in which some practitioners at least felt they were returning to the down-to-earth, vernacular spirit of the Middle Ages.[56]

Spearheaded by architects Morris and Webb, along with others such as W.R. Lethaby, C.F.A. Voysey, M.H. Baillie Scott, Edgar Wood, R. Norman Shaw, E.S. Prior, and Sir Edwyn Lutyens, the Vernacular Revival grew out of, and in resistance to, the wealth generated by the Industrial Revolution of the 19th Century.[57] Growing out of the Gothic Revival's search for authenticity in architecture, the Arts and Crafts movement itself was "a response to a century of unprecedented social and economic upheaval...an aesthetic resulting from the use of indigenous materials and native traditions were also central to the movement's philosophy..."[58] Arts and Crafts architects began to document local English cottages and farm-houses as inspiration for this 'new' architecture. The formal study of vernacular architecture began during the Arts and Crafts movement in a response to questions of aesthetic style and social principle in architecture; with it, the study of past building traditions were brought into the institutional fold, deemed worthy of professional investigation.

> Their characteristic designs were for long, low, sprawling houses set beneath wide spreading roofs, broken with gables, emphasized by deep eaves, with long bands of mullioned windows, plain rendered wall surfaces, spidery wrought iron brackets, diamond paned lattices, and so on. An appearance of age and history was built into the houses by the incorporation, presumably deliberate, of details from several periods in the same building, and premature repair work in, e.g., the use of sloping buttresses on exposed corners.[59]

Along with Morris and Webb, the architect and historian William Lethaby (1857-1931) was another leading light of the British Arts and Crafts movement. A co-founder in 1884 of the Art Workers Guild of London, Lethaby was not only interested in the craft and 'truth' of architecture, but was also a student and critic of Vitruvius. In staying true to his Arts and Crafts heritage, Lethaby revisited Vitruvian theory and proposed 'three ultimate facts behind architecture'; the first two 'facts', accorded with Vitruvius' utility and durability, while Lethaby's third 'fact', style (also defined as 'tradition' and 'nature'), contrasts with Vitruvian 'beauty' and since style "reflects a changing conception of reality, must like nature, be in constant flux."[60] Lethaby's approach to architecture led to a critical assessment of the Baroque, Neoclassical, and Gothic-revival periods as "mixed efforts to be Roman, Greek, and Gothic", he saw the failure of these periods as lying in their supposition that "architecture was a matter of forms, proportions and details, and that if these were observed and absorbed, similar works might be produced in due time."[61] Lethaby believed the Neoclassical and Neo-Gothic's search for the 'pure' in Classical and Gothic monuments to be overly dogmatic, inevitably leading to their failure in attaining the "spirit of the original" which they sought.[62] In *Architecture: An Introduction to the History and Theory of the Art of Building*, Lethaby declares: "The magical element in ancient architecture has not been clearly understood, we have put our modern notion of aesthetics in the way".[63]

Vernacular Architecture Studies

The focus on reviving English vernacular traditions led to a more formalised methodology in the study of traditional domestic architectures. Architect Ralph Nevill's *Old Cottages and Domestic Architecture in South-West Surrey* in 1891 was one of the first in-depth scholarly studies of English vernacular architecture[64] and detailed a survey of box-frame post-and-truss construction in Surrey undertaken in 1875, during his time as an assistant in the office of the Gothic-Revivalist Sir George Gilbert Scott.[65] In the late 19th Century non-architects became interested in the subject, with the solicitor S.O. Addy, in association with architect C.F. Innocent, writing *The Evolution of the English House* in 1898 and *The Development of English Building Construction* in 1916. While Nevill, Addy and Innocent focussed on English domestic traditions, Norman Isham, Albert Brown, Henry Mercer, and Irving Lyon were establishing vernacular architecture scholarship in the United States. All "were committed to the value of the arts and crafts movement... and all presented their works as explicit appreciations of the superiority of tradition, and as reformist in intent."[66]

In a reflection upon the philosophical impact of the Arts and Crafts movement in the United States, Isham and Brown present the founding study of American vernacular architecture studies with the publication in 1895 of *Early Rhode Island Houses: An Historical and Architectural Study*.[67] Dedicated to the scientific study of 17th and 18th Century 'first settler' houses to the New England region of the north-eastern United States, Isham and Brown's legacy to vernacular architecture studies is the establishment of a scholarly "tradition of dealing almost entirely with domestic architecture, a tradition not frequently violated except in studies of modern buildings."[68] Their contemporaries, Lyon and Mercer, arrived at the study of vernacular architecture via different means; Lyon was a medical physician with an interest in colonial furniture, while Mercer was an archaeologist renowned for his collection of pre-industrial artefacts. Both turned their interest in the material culture of artefacts to the study of vernacular architecture at the turn of the 20th Century.[69]

> Isham, Lyon, and Mercer, pioneers of American vernacular architecture study were antiquarians, exoticists, nativists, primitivists, and associationists in the nineteenth century tradition. All accepted the moral superiority of the old ways and believed that the material world somehow embodied the essence of past life.[70]

The work of these English and American founding scholars set the agenda for vernacular architecture research to the present day, and their different interests and backgrounds of scholarship reflect an original interdisciplinary research. Dell Upton, in "Outside the Academy: A Century of Vernacular Architecture Studies" sets out the history of American vernacular architecture scholarship between the years 1890 and 1990. He notes that vernacular scholarship has generally conformed to one of two 'dominant strains' of study – the historical and the cultural.[71] The historical tradition seeks to "understand architectural change in detail by relating it to patterns of social structure, economic differentiation, and craft tradition" while the cultural tradition seeks "large patterns, common values, and shared perceptions through typological, statistical, or geographical analyses of architecture."[72] Based on detailed studies (measured drawings) overlaid with a social appreciation of the timeless qualities of architecture, the work of Lyon, Mercer and Nevill were historical in focus, while Isham in maintaining a cultural focus, looked for larger patterns in social changes influencing architectural transformation.[73]

Anthropology and VAS

The Euroamerican scholastic renaissance of the late 19th Century saw a dramatic increase in the number of humanities-related social science disciplines. Of relevance to the history of vernacular architecture studies was the development of the field of anthropology. The application of scientific method to the study of humanity began with the work of Briton Edward Tylor (1832-1917) in the 1870s and German-American Franz Boas (1858-1942) in the 1890s. Due to their divided beginnings, British

and American anthropologists developed separate scholastic traditions (cultural and social) whereby 'cultural anthropology' was the dominant tradition in the United States and 'social anthropology' was the major stream in Britain and its Commonwealth.[74]

> The rubric 'cultural anthropology' is generally applied to ethnographic works that are holistic in spirit, oriented to the ways in which culture affects individual experience, or aim to provide a rounded view of the knowledge, customs, and institutions of the people. 'Social anthropology' is a term applied to ethnographic works that attempt to isolate a particular system of social relations – such as those that comprise domestic life, economy, law, politics, or religion – give...bases of social life, and attend to cultural phenomena as somewhat secondary to the main issues of social scientific inquiry.[75]

Of great relevance to the history of vernacular architecture studies is the seminal work of American lawyer and anthropologist, Henry Lewis Morgan (1818-1881). After 30 years spent researching North American (including Mexican) indigenous peoples, Morgan's *Houses and House-Life of the American Aborigines* in 1881 was the first cross-cultural scientific analysis of vernacular architecture ever published.[76] Morgan, a social anthropologist, is best known for his ethnographic work with the Iroquois peoples of north-eastern America where an analysis of house forms was used to study kinship systems and social organisation.[77] Through detailing indigenous 'house architecture', as Morgan[78] refers to it, *Houses and House-Life of the American Aborigines* attempts to answer two questions: "what does domestic architecture show anthropologists – either ethnologists or archaeologists – about social organisation, and how does social organization combine with a system of production technology and an ecological adjustment to influence domestic and public architecture?"[79] Morgan discusses the relationship between Native American 'house architecture' and social organisation, writing:

> The house architecture of the Northern tribes is of little importance in itself considered; but, as an outcome of their social condition and for comparison with that of the Southern Village Indians, it is highly important. An attempt will be made to show, firstly, that the known communism [communalism in today's terminology] in living of the former tribes entered into and determined the character of their houses, which are communal; and, secondly, that wherever the structures of the latter class are obviously communal, the practice of communism in living at the period of discovery may be inferred from the structures themselves, although many of them are now in ruins, and the people who have constructed them have disappeared.[80]

Morgan's work concerning the way humans interrelate with settlement patterns and architecture, later proved influential to the creation of Edward T. Hall's 'proxemics' theory of the 1960s.[81] Proxemics in contemporary anthropology is the study of the relationship between social structures and space, particularly buildings and their placement.[82] Morgan was also the first to define the difference between household and family in anthropological research.[83] In comparing Morgan with his contemporary Isham, Upton states that Morgan "sought to use architecture to explain Indian social structure, while Isham used his understanding of social and political history to explain architecture."[84]

VAS in the 20th Century: An Architecture of 'Otherness'

The social and political upheaval of the First World War (WWI) stymied the developed of the Arts and Crafts Vernacular Revival in the early 20th Century. With the Arts and Crafts movement emphasis on European and British indigenous principles, vernacular architecture was drawn into the political machinations building up to WWI. Traditional building forms, as historical representations of national identities, were used as public displays of nationalism across Europe, and the vernacular was used as a political tool in defining national identity and difference between the nation-states of the day.[85] The decline in the Arts and Crafts movement in Europe and the United Kingdom, post-WWI led to the rise of a new architectural movement in Euroamerican discourse and practice. Reflecting the advancement of the industrial age, the 'Modern' Movement ('Modernism') shifted away from the late 19th Century focus on traditional 'vernacular' forms of architecture towards mechanised modes of production with a resultant 'revisiting' of formal architectural principles once again. The fallout from the First World War's nationalist tendencies led to a reticence of displaying national identity through architectural ornamentation/decoration, the International Style, as Modernism was also called, was born.

The Modern Movement and VAS

The founding fathers of Modernism in Europe were the Austrian architect, Adolf Loos, and the German architect Hermann Muthesius. Writing in *Ornament and Crime* in 1913, Loos rejects 'pretentious bourgeoisie' notions of architectural 'style' in favour of common-sense 'rational' objects, such as men's clothing and shoes, which required no such styling to be functional; he writes: "Freedom from ornament is a sign of spiritual strength."[86] Opel, in the translators remarks for *Ornament and Crime* makes the point that Loos' theoretical position was driven out of his admiration for Louis Sullivan, the father of American modernism, with whom he had contact during a three-year stay in the United States in the mid-1890s. Loos was impressed with Sullivan's statement that: "It could only benefit us if for a time we were to abandon ornament and concentrate entirely on the erection of buildings that were finely shaped and charming in their sobriety."[87] Hermann Muthesius' involvement in the theoretical evolution of European Modernism related to his time spent as German cultural attaché to London in the 1890s. Muthesius was engaged by the German Government to study the English Arts and Crafts movement and the works of its principal architects. The results of his seven years (1896-1903) of research were published in *Das Englische Haus* in 1904, which presents the historical development of English domestic architecture from the 1870s through to the turn of the 20th Century.[88]

In presenting the architectural work of Webb, Norman Shaw, Voysey, Lutyens and Lethaby and Muthesius advocated the practicality of the English house with its good sanitary planning and its "intimate communion with nature that is expressed in its relationship to its site, the gardens that surround it, and its withdrawal from the bustle of the streets."[89] Inspired by the English Vernacular

Revival, Muthesius returned to Germany and in 1907 established the *Deutscher Werkbund*, a guild of German architects, artists and industrial designers. The intention of the *Werkbund* was to synthesise the principles of the British Arts and Crafts, as presented in *Das Englische Haus*, with the mass production of the industrial age. A number of the original members of the *Werkbund,* Ludwig Mies Van Der Rohe, Peter Behrens and Eliel Saarinen, went on to become famous 'modernist' architects.

Muthesius was also a student of the works of Semper, making explicit reference to *The Four Elements of Architecture* in a speech at the *Werkbund* in 1911 regarding architectural type (form) and function.[90] The value of Semper's work, in association with Muthesius' experiences in England, related to the relevance of adapting traditional architectural types versus reinventing them.[91] "They saw these types as solutions perfected anonymously and collectively over many generations, representative of their society precisely because of the anonymity of the process that had embedded the collective identity into the form."[92] Comparatively, Loos saw the *Werkbund's* attempts to rediscover the German 'style' through architecture as an 'unnecessary labour'[93] as it already existed in the unpretentious forms of the 'modern' vernacular.[94] Of further relevance to the history of VAS, the activities of the original members of the *Deutscher Werkbund*, through one of its founding members, Peter Behrens, went on to inspire some of the leading Modernist architects in Europe. In 1910, during the early years of the *Werkbund,* Behrens' architectural practice was commissioned to design the A.E.G. Turbine Factory in Berlin. Among his employees were Charles Edouard Jeanneret (later known as Le Corbusier) and Walter Gropius, who along with Mies Van Der Rohe would become three of the Modern movement's leading lights. Gropius (1883-1969) went on to establish the *Bauhaus* school of architecture in Weimar, Germany, in 1919, while Le Corbusier (1887-1965) went on to set up his Paris-based architecture practice in 1922. The pioneering efforts of Corbusier, Van Der Rohe, and Gropius, resulted in a global revolution in Modern architecture, and a revisiting of the role and significance of architecture in the 20th Century.

In 1911, the young architect, Le Corbusier took a five month trip from Vienna to Hungary, Serbia, Romania, Bulgaria, Turkey, and finally Italy and Greece. This *Voyage d'Orient* as he called it was to be a defining moment in the generation of Corbusier's 'modernist' ideals. The observations and understandings of the human condition gained through visiting Eastern Europe were to form the basis of his 1923 seminal manifesto *Vers Une Architecture* (*Towards a New Architecture*), the defining principles of which are mass, surface, and plan. Moreover, he drew inspiration for his *New Architecture* from both Muthesius and Loos, with whom he was personally associated.[95]

> It should be noted that, in these places, Le Corbusier sought not his own vernacular, but that of other people. In today's parlance, he sought the *other*, a pure and natural man, in contrast to a Western man corrupted by the turmoil of the nineteenth century. Le Corbusier's belief in some 'original' purity was common for the period.[96]

Four years later in 1927, Le Corbusier published *Five Points of a New Architecture*, which details additional points for consideration by architects, namely, supports, roof-gardens, free-plan, the long window and the free facade; elements that formed the basis for the majority of Modern architecture to the present day.

> From the 1930s to the 1960s, modernist architects showed a clear concern with the vernacular, as witness the work of Alvar Aalto in Finland, Franco Albini in Italy, and Aldo Van Eyck in Holland...Le Corbusier's connections to the vernacular cover an even larger span: he received his early education within a regionalist movement, used vernacular rubble walls in his Villa Mandrot in the 1930s and brick vaults in the Jaoul houses in the 1950s, and showed a continued interest throughout his career.[97]

Passanti in *The Vernacular, Modernism, and Le Corbusier* argues that Le Corbusier sought the vernacular architectural experience not as a search for architectural motifs, but as a conceptual model for a natural relationship between society and its artefacts (architecture).[98] Similarly to the vernacular-revivalists Reverend Le Petit and Viollet-le-Duc in the 1850s, Le Corbusier sought architectural principles rather than nostalgic aesthetics among the traditional architecture of pre-industrial societies. One other major difference between Corbusier's approach and the Vernacular-revivalists in England was his cross-cultural focus in seeking the principles of a new architecture in non-Euroamerican environments. Le Corbusier's interest in 'traditional' architecture reflected a general curiosity among European artists of 'folk' and 'primitive' lifeways and artefacts. For example, in 1909, Pablo Picasso drew inspiration for his Cubist-era work *Les Demoiselles d'Avignon* from African tribal art.[99] Le Corbusier's reframing of traditional and folk approaches to architecture led to a greater general interest of non-Euroamerican principles and methods in Modernism during the intervening war years of the 1920s.

> Le Corbusier did not advocate the remaking of past forms, but that students should appreciate what mattered in architectural terms. When he drew attention to such built forms and emphasised their relationship to the functions which they were built to meet, a seal of approval was stamped upon the study of vernacular buildings by architects.[100]

In *The Buildings of England*, the architect and art historian Nikolaus Pevsner (1902-1983) published a comprehensive 42-volume guide of the history, settlement patterns and building typologies of England's architectural heritage. He is best known for his contribution to the architecture/building debate, having once said: "A bicycle shed is a building; Lincholn Cathedral is a piece of architecture".[101] Pevsner's suggestion illustrates a desire to qualify architecture as something other than building, and not only illustrates the difficulty in defining the concept of architecture, but also the politicisation of the etymological process related to the use and meaning of the term.

The Architecture-Vernacular Dichotomy

The 1920s were significant as the period in which the term 'vernacular' became common architectural parlance. Previously it had been used interchangeably with 'primitive', 'folk', 'indigenous', 'spontaneous', and 'traditional' without it being formally defined in academic architectural discourse. As Upton notes in "Outside the Academy", the scholar responsible for its formal integration into architectural theory was the American art historian Fiske Kimball (1888-1955).[102] Kimball's lasting influence over the American school of vernacular architecture studies involved the classification of a separate etymological definition of 'vernacular' in relation to 'architecture' as being defined more by what it was not, than what it was – the vernacular was not academic, it was not modern, it was not aesthetic. Kimball's 'vernacular-academic dichotomy', as Upton calls it, drew an epistemological line in the sand, whereby as opposed to Morgan's inclusive approach, 'vernacular' architecture discourse was theoretically excluded from academic architectural history discourse. As Upton notes below, Kimball drew a line in architectural theory on aesthetic (architecture) versus purely functional (vernacular) grounds:

> The scholars of Isham's generation [late 19th Century] never used the term vernacular architecture, nor did they distinguish their buildings categorically from other kinds of architecture. They saw them as the products of a unitary English tradition, made plain by pioneer circumstances and economic limitations... Kimball thought differently. His *Domestic Architecture of the American Colonies*...marks a turning point in setting off the vernacular as a separate category of architecture...His point was that the introduction of 'the academic spirit and the academic architectural forms' at the beginning of the eighteenth century represented a qualitative intellectual transformation. 'It involved a transference of the emphasis from functional considerations to those of a pure form'. The corollary was that Kimball conceived vernacular architecture – still lacking the name – as a discrete though archaic tradition, one based on function rather than aesthetics and thus existing outside of academic canons. For Kimball, colonial vernacular houses were the homes of a social type, the Anglo-American yeoman, rather than relics of noteworthy individual ancestors, as they had been for Isham.[103]

Upton illustrates that Kimball's actions effectively reified the historical-cultural split seen in the late 19th Century in the work of Lyon, Mercer, Nevill and Isham. Furthermore, he notes that the early history of vernacular architecture scholarship was dominated by historians "whose assumptions and methods have remained relatively stable" to the present day, while cultural scholarship of vernacular architectures followed a historic-geographic method between the 1930s and 50s after which it shifted focus to anthropology in the 1960s.[104] Upton exemplifies that post-Kimball, American vernacular studies saw art and architectural historians (the historicists) proceed with a canonical-historical interpretation of the vernacular, which investigated architectural form and change through the 'detailed minutiae' of individual buildings. Meanwhile, social science practitioners (the culturalists), in accepting the 'vernacular-academic dichotomy', proceeded on a separate 'historic-geographic' approach in broad-scale regional analyses of building traditions.[105] Upton is critical of the ease with

which Kimball's definition was accepted on both sides of the scholastic divide. "Geographers and folklorists explicitly accepted the vernacular-academic dichotomy... they tended to meld the entire vernacular landscape into a misleading architectural consensus, overlooking class differentiation and chronological change."[106]

> Kimball's *Domestic Architecture* set the stage for subsequent works that conceived vernacular architecture as an anonymous backdrop, the medium of the common man and woman, against which to set the mutable and distinctive building of the prominent patron and the named architect. The assignment of vernacular building to a timeless and socially homogenous folk allowed vernacular architectural historians to pick up where Lewis Morgan had left off forty years earlier and interpret it in cultural terms, as an expression of collective mind.[107]

A review of architecture scholarship over the last 100 years illustrates that of the two vernacular research streams, the historical tradition has generally been dominated by architects and art historians while the cultural tradition became the realm of geographers, anthropologists and other social scientists.[108] The theoretical foundation and methodologies of the two streams differ in that the historical stream maintained a narrower focus on individual buildings, in particular the built forms of rural districts, while employing fieldwork techniques such as detailed graphic recordings of building technologies. The less-cohesive 'culturalist' historic-geographic school focussed on 'surviving traditional culture', and 19th Century American popular domestic and agricultural building types.[109] This specific Anglo American-centric pre-occupation continued until the emergence of a third (cross-cultural) approach to vernacular architecture studies in the 1960s. Although beginning with Isham, Nevill and Brown in the late 1800s, the formalisation of vernacular architecture as a field of concerted academic study did not occur until the Post-Modern era of the late 1960s.

Modern Architecture: Moholy-Nagy, Rudofsky and the Cross-cultural Vernacular

One of the first 'modern' works in the emergence of cross-cultural architectural studies was the publication of architectural historian Sibyl Moholy-Nagy's *Native Genius in Anonymous Architecture* in 1957.[110] Moholy-Nagy's (1903-1971) book was a watershed moment in the history of vernacular architecture studies, being one of the first major publications on the 'house' architectures of non-Euroamerican peoples since Lewis Henry Morgan in 1875.[111] The intellectual tradition underscoring *Native Genius* was heavily grounded in a 'modernist' appreciation of 'anonymous' architectures through Moholy-Nagy's connection to the Chicago Institute of Design (CID) established in 1941 with husband László Moholy-Nagy, a Hungarian painter and photographer. The CID grew out of László's experience as an architectural design teacher at the German Bauhaus school under Walter Gropius in the pre-World War II period. Sibyl Moholy-Nagy writes in *Native Genius*:

> Buildings are transmitters of life. They transmit the life of the past into the lives of the future – if they are more than mere shelter and more than borrowed form. A people without architecture transmits little of its culture. Each phase of its history ends with the death of the generation that created it...The lack of architectural self-expression of many great peoples terminated their day in history beyond recall....But beyond the pedigreed "history in stone" exists an architecture that transmits a different aspect of life. It testifies to the aspirations of the group. Its buildings tell not the official but the private history of a culture – the unending struggle for physical and spiritual survival of anonymous men. Indigenous buildings speak the vernacular of the people.[112]

Moholy-Nagy's work presents an analysis and appreciation of 'anonymous' wisdom in architectural form and technology through photographic records and sketches of house architectures, places of worship and other nondescript architectural forms throughout the United States of America, Canada, Mexico and Haiti. In a similar modernist approach to Le Corbusier, Aalto and Van Eyck, Moholy-Nagy's discussion centres on the value to the discipline of architecture of studying 'anonymous' or 'spontaneous' architectures. Moholy-Nagy questions the 'vernacular-academic' dichotomy in stating: "Spontaneous building cannot be separated with a precise dividing line from technological and academic design. Simplified academic and technological elements do occur in anonymous architecture."[113]

Moholy-Nagy's seminal work inspired another classic Modernist treatise on vernacular architecture with Bernard Rudofsky's 1964 Museum of Modern Art (MOMA) exhibition *Architecture Without Architects.* The accompanying publication in 1965 sold more than 100,000 copies in the United States of America alone.[114] Rudofsky's cross-cultural presentation, now criticised for its blatant 'modernist' overtones,[115] was seen as subversive at the time with the American Institute of Architects (AIA) protesting against the devaluing effects of his claim that architecture could exist without architects.[116] In *Bernard Rudofsky: A Human Designer*, Guarneri states that "Rudofsky does not place 'architecture' and 'architects' in their usual relationship, according to which, once one of the two terms has been defined...the other is automatically determined."[117] In the 40 years since the publication of *Architecture Without Architects* many scholars have taken issue with Rudofsky's conception that vernacular architecture was spontaneous, lacked thought, was anonymous, and did not go through fashion cycles, being immutable, unimprovable, and serving its purpose to perfection.[118] Likewise, Highlands in "What's Indigenous? An Essay on Building" claims that Rudofsky's position was the position of the Modern Movement at the time, which saw truth and worth in vernacular and indigenous objects.[119]

Rudofsky's MOMA exhibition was supported by some of the most prominent architects of the Modern Movement; he gave specific acknowledgement to the support from architects Gropius, Pietro Belluschi, Jose Luis Sert, Richard Neutra, Gio Ponti, and Kenzo Tange, "all of whom hail from countries rich in vernacular architecture."[120] He was also personal friends with László and Sibyl Moholy-Nagy,[121]

and perhaps due to Moholy-Nagy's *Native Genius* publication with its focus on North and Central America, the geographical distribution of architectures chosen for Rudofsky's exhibition heavily favoured Europe, the Mediterranean and the Middle East with an almost complete disregard for North America (only 1 of 156 images presented was North American).[122] The significance of the work of Moholy-Nagy and Rudofsky to the history of VAS lies in exposure of non-Western architectures as a legitimate area of investigation in contrast to the broader (Western-defined) architectural canon. 'Otherness' in architectural theory was now a legitimate area of study. While Moholy-Nagy's work related less to the vernacular-academic dichotomy than Rudofsky's, neither went so far as to propose methods of investigation; however, the foundation was set for others to build a solid scholarship and discourse in vernacular architectural theory.

VAS 1969-2009: Ranging Epistemologies and Eclectic Methodologies

With Kimball's vernacular-academic dichotomy set in architectural theory, the canonical 'historic' tradition continued unabated in architecture studies during the mid 20th Century, while the 'culturalist' historic-geographic school split into a third distinct group in the late-1960s.[123] Termed the 'mentalist' approach, and based on a return to anthropological, ethnographic and geographic methods of investigation, this theoretical schism was influenced by the 1969 work of architect Amos Rapoport in *House Form and Culture*, anthropologist Paul Oliver in *Shelter and* Society in 1969, and folklorist Henry Glassie in *Folk Housing in Middle Virginia* in 1975.[124] Coinciding with the rise of social science disciplines, the 1960s saw a shift in VAS away from the historical academic focus on Anglo-American and European vernacular architectural traditions towards the architectures of 'otherness'. This pursuit of cross-cultural understandings of 'vernacular' architecture resulted in a broadening of the epistemological and methodological framework of vernacular architecture studies.

A review of literature over the last 40 years of vernacular architecture studies has shown that the major advances in vernacular scholarship occurred with the incorporation of cross-cultural studies. New approaches for understanding 'others' were needed and resulted in the addition of research methodologies from outside the traditional architectural repertoire of measured drawings and taxonomic categorisation of technical details and aesthetic forms. In searching for methods appropriate to the understanding of other cultures, vernacular architecture scholarship returned to the social sciences disciplines for answers. The very nature of disparate cultural environments and the social and political contexts affecting architectural manifestations was cause for greater interdisciplinarity and cross-disciplinarity in the realm of VAS. A number of scholars have questioned the rationale of VAS remaining outside the academic architectural mainstream.[125] For example, in the March 1969 issue of the *Journal of the Society of Architectural Historians* Maass complains of the ignorance shown by mainstream Euroamerican architectural historians towards non-Euroamerican peoples.[126] In "Where Architectural Historians Fear to Tread", Maass demonstrates that of the 257 articles written

on architecture in the Society's journal (up to 1969) only six were non-Western in orientation. Of those, four were from Japan.

> There can be no doubt that the assumption of white supremacy forms the basis for this unbalanced view of the globe. The ratio of 251:4:2 corresponds with the Victorian scheme which divided the world into civilized, semi-civilized, and barbarous races. This simplistic doctrine should no longer be reflected by a scholarly discipline and journal in the late twentieth century.[127]

The Theoretical Leaders of VAS

A review of vernacular architecture literature since 1969 shows that in general there have been two major streams of vernacular architecture scholarship, the first being architectural research, and the second being founded in social science disciplines such as anthropology, cultural and social geography, environmental psychology and ethnoarchaeology. Of these two streams, the major differences relate to different research methodologies and disciplinary foci. The majority of architectural work appears to be related to the aesthetic judgement of built form accompanied by an informal appreciation of the relationships between built form and social organisation, behaviour, and belief structures. Inversely, social science practitioners formally evaluate social organisation, behaviour and belief, overlooking the discussion of architectural form. An analysis of the architectural literature reveals that vernacular architecture studies in the architectural stream are further divided between Euroamerican and non-Euroamerican cultural investigations with some (the 'cross-culturalist') maintaining interest in cross-cultural study,[128] while others (the 'canonicists') remaining with the study of Anglo-American and European vernacular traditions[129]. Cross-culturalists are more reliant upon non-linear anthropological, social science methodologies and epistemologies, while the Anglo-centrist canonicists trust historical methods such as taxonomic categorisation and technical audits for analysis.[130]

Likewise, the social science stream of vernacular architecture studies is divided into two approaches, the first being those scholars influenced by Levi-Strauss' 'house societies' models[131], and the second being those scholars who take a broader view of vernacular architecture to include non-house architectures in their epistemological framework.[132] Given the disparate discourse of the two major streams, the addition of anthropology to architectural study has been of major importance to the growth of vernacular architecture studies over the last forty years. "The prevailing attitude inherent in all studies of vernacular and popular architecture is one very similar to that of anthropology."[133] This interdisciplinarity coupled with the rise of international associations, academic conferences, and symposiums on the subject, has resulted in greater homogeneity in methods and theoretical approaches in the field. Vernacular architecture discourse now governs the importance of studying the symbiotic relationship between humans and artefacts.

Over the last 40 years there have been four main theoretical leaders in vernacular architecture scholarship; Amos Rapoport, Henry Glassie, Paul Oliver and Dell Upton. Of the two streams of vernacular scholarship identified above, Glassie and Upton focus mainly on Anglo-American building traditions, whereas Oliver and Rapoport maintain a cross-cultural focus. Combined, these four scholars bring multidisciplinary expertise to VAS, including architecture, folkloricism, anthropology and history. The following is an abridged discussion of the theoretical contributions of each scholar to the field of vernacular architecture studies, and draws together the most important aspects of their work.

Rapoport

From a purely theoretical standpoint, one of the longest serving theorists on vernacular architecture over the last 40 years has been Amos Rapoport. In 1969, *House, Form and Culture* was one of the first cross-cultural studies of non-Western architecture to hypothesise that the vernacular house form "is not simply the result of physical forces or any single causal factor, but is the consequence of a whole range of socio-cultural factors seen in their broadest terms."[134] Rapoport describes the importance of the so-called 'unimportant' dwelling to the environmental 'matrix' of contemporary socio-cultural settings, and discusses how contemporary Euroamerican architectural theory ignores the so-called 'simple' dwelling in favour of more important, 'high-style' monuments and supposed 'acts of genius'.[135] He observes that those apparently 'insignificant' buildings have a latent capacity to teach the most about past, present and future cultural conditions through the study of others' building traditions. Upton illustrates the seminal nature of Rapoport's work in shifting the academic focus from an 'historicist' aesthetic analysis of 'anonymous' architectures, as in the case of Rudofsky's *Architecture Without Architects*, to one of a 'culturalist' interpretation of house form as "socially transmitted...in shaping architectural responses to environment, economics, technology, defence, and site."[136]

Rapoport's proposal for VAS is a "conceptual framework for looking at the great variety of house types, forms and the forces that affect them."[137] He describes VAS as lacking of "theoretical or aesthetic pretensions; working with the site and micro-climate; respect for other people and their houses and hence for the total environment, man-made as well as natural; and working within an idiom with variations within a given order."[138] Rapoport subscribes to the belief that vernacular architecture lies between 'primitive' and 'high-style' 'modern' architecture within the hierarchy of architectural history and is characterised by an unspecialised, open-ended nature which enables it to accept change more so than 'high-style' design.[139] Furthermore, he underscores the importance of tradition giving 'collective control' in vernacular design: "Tradition has the force of a law honored by everyone through collective assent" and without it "there can no longer be reliance on accepted norms, and there is a beginning of institutionalization."[140] He states the most effective approach

to studying vernacular buildings is from the specific point of view of the building in its context of place, incorporating all of its properties such as history, location, settlement patterns, social aspects, climatic response, materials, and construction techniques, rather than chronologically tracing building development over time.[141]

The 1980s saw Rapoport shift his theoretical position away from a theory of vernacular studies to a broader position on the study of all built environments. In contemplating on the study of vernacular architecture, this change arose in recognition that the majority of methods and theories that underpinned Rapoport's study of vernacular architecture (as a separate architectural category) are common to the study of all "environments and relationships among them" be they high-style, popular, folk or vernacular.[142] In "Defining vernacular design", Rapoport argues for a polythetic, multiple attribute versus a single-attribute monothetic definition of vernacular architecture, and in doing so led to a theory of Environment-Behaviour Studies (EBS) as the solution to understanding all built environments, "however designed, cross-culturally, throughout history."[143]

In "Systems of Activities and Systems of Settings", Rapoport pronounces that architecture is composed of activities, settings and meanings, with these three elements interwoven whereby meanings are a function of activities, and activities are a function of settings.[144] In an adaptation of Hall's proxemics theory, and following on from Morgan's work of the 1880s, Rapoport proposes a theory of the built environment as "consisting of fixed-feature elements (buildings, floors, walls, etc), semi-fixed-feature elements ('furnishings', interior and exterior of all sorts), and non-fixed-feature elements (people and their activities and behaviours)".[145] He illustrates that the extraordinarily large number and diverse range of built environments generated by humankind, both contemporary and in past time, accommodate a significantly much lesser range of human activities.[146] That is to say many human behaviours (and units of such) that are enacted in architectural settings recur across cultures and historic periods. His premise to the theory of people-environment studies therefore posits that built environments are created to support desired behaviour and that 'activities' can be taken to be higher order units, and enactments, of behaviour. In "Levels of Meaning in the Built Environment" Rapoport argues that meaning is a most important 'function' of human 'activity' which in turn serves to generate architectural 'form'. He states that meanings permeate people-environment relations in three significant ways: "the human propensity to impose meaning on the world; the built environment as influencing behaviour through meaning; [and] meaning as an important mechanism linking environments and people".[147]

> Since meaning is the most latent aspect of any activity, this means that meaning is not something added to 'function' but that meaning itself is a most (if not *the* most) important function in the sense that the form of the environment responds to it. This helps explain why wants are often more important than needs and why apparently 'irrational' choices are made by users...it helps to explain the otherwise puzzling large numbers of different built environments.[148]

Rapoport developed his 'meaning-activity-architecture' argument further in *The Meaning of the Built Environment: a nonverbal approach*, and states that the term meaning as used in the study of built environments was too global to be useful, as "built environments, and material culture generally, may communicate *several distinct types of meaning*".[149] He recommends the use of three separate 'levels' or types of meaning as high, middle and low, whereby 'high-level' meanings related to cosmologies, cultural schemata, worldviews, philosophical systems and the sacred; 'middle-level' meanings were those communicating identity, status, wealth and power; and, finally, 'low-level' everyday and instrumental meanings comprised mnemonic cues for identifying uses for which settings were intended as well as the associated expected behaviours of such social situations.[150] These three levels or categories of meaning were ideological, social and behavioural in intent. Rapoport explains that low-level meanings should always be present if the environment was to work in a practical manner for users, visitors and those uninitiated into the higher levels of meaning.[151] In many cultures only a minority may be inducted into the higher-level meanings of their built environment, and the extent and use of high and middle level meanings will also vary cross-culturally. "In order to clearly understand the relation between built environments, cross-culturally and historically, all three levels of meaning need to be considered, studied, and understood; they are complimentary rather than conflicting or competing."[152]

Rapoport's Environment-Behaviour Studies (EBS) theory provided part of the necessary practical and theoretical framework to understand and investigate the nature and diversity of human architectures, and captured both the requisite dynamics of people-environment interactions as well as the cross-cultural diversity of behaviours, values, customs and meanings associated with built-environments and physical constructions. Growing out of his initial appreciation and interest in vernacular architecture, Rapoport concentrated on the entire corpus of human activity and built traditions. Although he appears to have moved away from the study of vernacular environments in recent works, the continuing contribution of Rapoport's EBS to VAS cannot be understated. One could imagine the future of cross-cultural architectural scholarship may eventually return EBS and VAS to a more unified theory of the built environment.

Paul Oliver

Over the last forty years, the scholar whose works have shown the most thematic consistency towards cross-cultural vernacular architecture research is anthropologist Paul Oliver. Oliver's *Shelter and Society*, published in 1969 (the same year as Rapoport's *House Form and Culture*) draws together exemplar cross-cultural cases studies to describe "the ways in which differing kinds of building meet the needs of their respective communities and contain values special to them."[153] Such a use of exemplar case studies is a persistent pattern in Oliver's cross-cultural work. In drawing on the work

of modernist architects Alvar Aalto in Finland and Charles Warren Callister in California, Oliver debates the politics surrounding the etymological derivation and usage of the terms 'architecture', 'vernacular' and 'building', and proposes that "the 'vernacular' is still essentially the work of architects, who share, however, a local dialect influenced by the resources of the region and deriving from an indigenous tradition."[154]

Oliver's most significant contribution to vernacular architecture studies came in 1997 with the edited publication of the *Encyclopaedia of Vernacular Architecture of the World* (*EVAW)*. Comprising three volumes, *EVAW* brings together more than 750 scholars from over 80 countries to discuss the vernacular architectural traditions of more than 2000 different cultures. Due to its monumental scope, *EVAW* does not provide a cross-cultural or geographical comparison of vernacular architecture. Instead, EVAW is similar to Oliver's previous publications[155] with its first section (volume 1) dealing with the theories and principles of vernacular architecture research, while the subsequent sections (volumes 2 and 3), cultures and habitats, present the documentation and analysis of the specific building traditions of those cultures and regions under investigation. In terms of its broader significance, *EVAW* has helped to "define vernacular studies as an accepted field" of research within the architectural canon.[156] The *Encyclopaedia of Vernacular Architecture of the World* details 21 different methodological approaches to the study of vernacular architecture, including:

- the aesthetic, relating to ideas of quality and value;
- the anthropological, where buildings are seen as cultural artefacts pointing to the relationship between dwellings and social structures;
- the archaeological, comparing contemporary buildings with the artefactual record (ethnoarchaeology);
- the architectural, uncovering organisational and technological principles;
- the behavioural, in relation to buildings and their behaviour settings (EBS of Rapoport);
- the cognitive, mental mapping of the built environment (etic versus emic debates);
- the conservationist, protection and preservation of buildings;
- the developmental, detailing the significance of building traditions to the world's housing needs;
- the diffusionist, considering processes of change and the distribution of forms;
- the ecological, focusing on habitat as part of the total environmental system;
- ethnological, in relation to the scientific description of societies and building practices;
- the evolutionary, detailing the development of building form over time;
- the folklorist, regarding building practices as craft based;
- the geographical, considering settlement patterns and systems;
- the historical, studying buildings diachronically;

- the museological, preserving buildings in situ or relocated;
- the phenomenological, identifying the experiential nature of place;
- the socio-semiotic, detailing architectural concerns with form, function and signification;
- the spatial, relating to the organisational and articulation of spaces;
- the structuralist, disclosing the deep structures and meanings of buildings, where changes in one aspect may signify changes in others;
- and, the generative-transformational, defining the rule systems underlying evolution and change in vernacular traditions.[157]

Oliver states that vernacular architectures extend "the linguistic analogy that is frequently applied to the language, grammar and syntax, and even the style or manner of its expression of formal architecture is the local or regional dialect, the common speech of building" and is "one of the most concrete manifestations of people and the environment" arising through an evolution of materials, functions and construction methodologies.[158] Another recurring theme in Oliver's earlier work to be revisited in *EVAW* was the definition and usage of the term 'vernacular' in architecture. It appeared that even after 30 years of research, with an entire three volume encyclopaedia devoted to the topic, Oliver was still unable to develop an appropriate definition for this broad and diverse area of architectural research. Oliver laments in *EVAW*:

> A number of attempts have been made to find an overall definition of vernacular architecture. It is not surprising that these attempts have been unsuccessful for the term is used to embrace an immense range of building types, forms, traditions, uses and contexts…It is evident that the range and forms of construction, variety of uses, layers of meaning and complexity of cultural milieu of vernacular buildings is multifarious. Therefore, to seek a single definition of vernacular architecture is probably ill-advised, for it attempts to reduce the richness and diversity of these traditions to a simplistic description, inevitably diminishing them in the process.[159]

In the ten years since the issue of *EVAW*, Oliver has published three further books on the subject of vernacular architecture. The first, *Dwellings: The Vernacular House World Wide* is the second edition, and a considerable revision of his 1987 publication *Dwellings: the house across the world*. Published in 2006, the second post-*EVAW*, *Built to Meet Needs: Cultural Issues in Vernacular Architecture* is a text book for students of vernacular architecture, and considers the role of local economies, technologies, inherited and transmitted skill, social and family structures, physical needs and belief systems to the study of vernacular architecture. Both *Dwellings* and *Built to Meet Needs* consider the relevance of vernacular architecture to the social and cultural problems of developing countries, and the conservation and continuity of vernacular architectures in the 21st century. Published in 2007, the *Atlas of Vernacular Architecture of the World (AVAW)* is Oliver's third post-*EVAW* publication.[160] Co-written with Marcel Vellinga, *AVAW,* as the companion to *EVAW,* presents the written information

assembled in the 1997 encyclopaedia in a cartographic form. All three books build on the work in EVAW and revise Oliver's earlier work by revisiting the etymological derivation of the term vernacular. Oliver continues to refine his original definition of 'vernacular architecture':

> Vernacular architecture comprises the dwellings and all other buildings of the people. Related to their environmental contexts and available resources, they are customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of life of the cultures that produce them. They may be adapted or developed over time as needs and circumstances change.[161]

Interestingly, for this 2003 definition of vernacular architecture, Oliver adds the last sentence on cultural change to his 1997 definition, illustrating that not only is the field of vernacular architecture itself dynamic but also the approaches designed to study it come under the same active treatment. Oliver's work over the last 40 years has been the most influential of all vernacular architecture scholars in firstly defining and secondly defending the formulation of VAS as a specific field of inquiry in the broader canon of architectural research. Drawing on an anthropological and sociological base, Oliver's work, and now the work of his students, consistently confronts the following themes: the etymological derivation and political significance of the term 'vernacular' in architectural theory; the architect-builder distinction; the positioning of vernacular architecture research as a serious field of study within the broader realm of post-modern architectural history and theory; and the value of 'vernacular' architectures in confronting cultural homogenisation through globalisation in the present day.

Henry Glassie

Folklorist and architectural historian Henry Glassie is another of the most influential vernacular architecture scholars of this generation. Rising to prominence in the 1970s with *Folk Housing in Middle Virginia*, Glassie's work focuses on the study of ordinary, everyday domestic architecture.[162] He regards the study of traditional artefacts (material culture) as a means of interpreting and understanding the past (in this case 18th Century social and cultural contexts).[163] Remaining within the Anglo-American vernacular architecture canon, and taking direction from the scholarship set by Isham, Lyon, and Morgan, the significance of Glassie's work lies in his carefully constructed and rigorously supported methodology for the study of vernacular architectures. In developing this unique interdisciplinary approach he combines Chomsky's theory of transformational grammar (socio-linguistics) and Levi-Strauss' structuralist anthropology to interpret the cultural, social and political contexts.[164] His reading of unwritten 'non-verbal' house architectures in conjunction with written 'verbal' historical evidence, while validating the study of traditional ordinary architecture aimed at a comparative examination of architectural stability and change in 18th Century Virginia.[165]

> Artifacts are worth studying because they yield information about the ideas in the minds of people long dead. Culture is pattern in mind, the ability to make things like sentences or houses. These things are all that the analyst has to work with in his struggle to get back to the ideas that are culture. The work of mining the artefact for culture begins when the motionless stuff one touches is recognized as the product of an enormously complex and electric transaction in mind between two abilities. One is the ability to compose: 'competence'. The other is the ability to relate the composition to things external to it in its 'context'. The result of this interrelation is a person's actual 'performance' – the product that can be observed by the scholar.[166]

In investigating 'competence' (the process) through a comparative analysis of 'performance' (the product), Glassie selectes the previously unknown architectural traditions of Goochland and Louisa, two towns in Virginia, for his comparative analysis. Glassie compares his taxonomic physical record of 18th Century house types and their variations with the historical archival record, and finds that houses became more formal and less related to their environment at the same time as the area's established political, economic and religious institutions were disintegrating. Glassie suggests that the house-builders were deliberately trying to impose order on the surrounding chaotic world.[167]

> Architectural thinking is bound to thinking about nonarchitectural matters, so that any theory explaining architecture in solely architectural terms may be somewhat correct, but it can never be enough. The social, economic, political, and religious conditions of life in Middle Virginia changed. People adapted to these changes, developing new modes of thought, and the things they did, the artefacts they made, manifested the changes that had taken place in their minds.[168]

Over the thirty years since the original publication of *Folk Housing in Middle Virginia*, Glassie has published a number of other books on the subject of folk arts and architectures, most notably: *Passing the Time in Ballymenone: Culture and History of an Ulster Community* in 1982; *Turkish Traditional Art* in 1993; *Art and Life in Bangladesh* in 1997; and *Material Culture* in 1999. Of specific note to vernacular architecture studies is the publication in 2000 of *Vernacular Architecture* in which he states in a similar manner to Rapoport that the study of vernacular architecture is "an approach to the whole of the built world"[169], and calls for a more expansive acceptance of non-elite architectures in 'academic' architectural history.[170] Importantly for vernacular architecture studies, Glassie sees the study of vernacular architectures as lifting a previously neglected canon of architecture out of historical obscurity into contemporary awareness. "Vernacular architecture brought to thought, helps us shape a better history."[171] The book itself is a cross-cultural comparative presentation of empirical research conducted in the United States, Europe and Asia over the last forty years. Yet Glassie is scathing of the lack of appropriate research into vernacular architectures, stating that to neglect the study of certain buildings while choosing to value the study of others is a sign of academic ignorance which in itself is a rejection of cultural diversity, difference and conflict.[172] He calls for a "more expansive and inclusive history, one fit to the world we inhabit, a history that can guide

improvements in architectural preservation and in new architectural design, a history that can help us live meaningfully and decently upon the earth."[173] In *Vernacular Architecture*, Glassie is also critical of the art and architectural historian:

> Should we wonder why architectural study has aped the study of art in its erection of a canon of important buildings, we will find, on reflection, a host of causes. One of them has to do with the ease of procedure. Selecting a few buildings, a few architects, and then linking them up chronologically, we can borrow the facile techniques of the historian of great men and events. But taking the comprehensive view and recognizing diversity, the study of vernacular architecture drives toward better historical procedures, ones that focus existentially on action and leads to the construction of a multiplex idea of time. We call buildings vernacular to highlight the cultural and contingent nature of all building. Proposing distinctions and labelling buildings along the way, the study of vernacular architecture is an approach to the whole of the built world. It favours completeness, recognizes diversity, and seeks ways to use buildings as evidence in order to tell better versions of the human story. In the future, it will be obsolete, but now the term 'vernacular' is one of the tools we use when we face architectural objects with a wish to crack them open and learn their meanings.[174]

Glassie's prediction that in the future the term 'vernacular' will be obsolete is relevant to the current discussion. Many scholars have attempted to reconfigure the definition of the term; perhaps the problem is the term itself, perhaps it has reached its nexus, and is now on its definitional nadir?

Dell Upton

Architectural historian Dell Upton is the fourth scholar to be identified as one of the most influential in the field of vernacular architecture studies in the last forty years. His contribution has been primarily theoretical, and not unlike Glassie, Upton questions the inherent biases built into the history of academic architectural research. In "The Tradition of Change" Upton warns against seeking a cross-cultural understanding of architecture of vernacular landscapes that itself results in a reification of those landscapes and architectures. Other than his consistent challenging of mainstream academic formulations of the field, one of Upton's most significant contributions to VAS is his call for a dynamic theoretical rethink in defining and recognising vernacular architectures. He asserts: "If the vernacular is stable by definition, it is also, by definition, marginalized in a changing world. Its stability and passivity imply a stagnation and even deprivation against which mainstream cultural change – our ways – can be seen to advantage and judge."[175] Upton rejects Euroamerican romantic associations of 'authenticity' and 'tradition' in the study of vernacular architectures of non-Euroamerican environments, and insists upon a dynamic understanding of change within such environments.[176]

In "Outside the Academy: A Century of Vernacular Architecture Studies, 1890-1990", Upton presents two 'intuitive' models of vernacular architecture. The first, discussed previously in this chapter, is Fiske Kimball's definition, which defines 'vernacular architecture' "by what it is not: it is not the

academic architectural tradition, and therefore it is a catch-all that includes not only folk houses, but tract houses, hamburger stands, and anything else that does not fit the traditional canon". The second, traced back to VAS 'founders' Isham and Morgan, "identifies the vernacular as an architecture that grows directly out of social and cultural process", produced by "an actual correspondence of a state of mind and a manner of life".[177] In evaluating the history of vernacular architecture studies, and in a similar manner to Glassie above, Upton pronounces a 'new architectural history' that might replace the present 'art history' dominated architectural history and theory, which largely ignores vast regions of what is presently defined as the vernacular built environment.[178] He stresses that as VAS draws "nearer to cultural theory and to the new art history" in looking at academic buildings with 'vernacular eyes', and that Fiske Kimball's "line between vernacular and academic architecture will be erased and the vernacular-academic dichotomy will be replaced by a much more complex paradigm that recognizes change and stasis, diversity and conflict, pattern and discontinuity in all varieties of architecture."[179]

In "The VAF at 25: What Now?" Upton, in 2007, builds on his earlier assertions to propose two methods by which this theoretical transformation could occur. In defining the first approach, Upton states that "rather than remaining anchored to a style, a category (high or vernacular), an architectural movement, or any other single unit of analysis, [the building under investigation] can be mapped at the intersection of circles of knowledge that might be shared by any or many of its makers."[180] Following 'everyday life' political theorists Henri Lefebvre and Michel de Certeau, who see the built environment as a 'totalising socio-political structure', Upton's second proposition for equality in architectural investigation calls for the subdivision of the built environment "not into categories of high and low, or monumental and vernacular, or by types and styles, but into spaces that encourage and discourage certain kinds of activities...ordinary and the extraordinary would be action terms rather than aesthetic, formal, or intellectual ones."[181]

> This is not a definitional problem that can be solved by some newer or more precise conception of what vernacular architecture 'really' is. If our intention is to understand the built environment and the people who make and use it, then it seems we do ourselves a disservice by isolating and exalting some piece of it. In addition, we make it possible for those who study other aspects of the environment to isolate and ignore this one. We have come to understand that processes of identity, design, and signification are more complex and more difficult to explain than we once realised. Our enterprise needs to rise to the challenge.[182]

A review of VAS literature shows the work of the four scholars presented above to be complementary rather than oppositional in relation to the theoretical development of VAS as a serious endeavour within architectural and social science theory. Collectively, these authors show the diverse theoretical and methodological frameworks which are relevant to the investigation and understanding of vernacular architectures; and together, they call for the democratisation of architectural theory in relation to the

architectures of 'others' outside the dominant Euroamerican architectural tradition. As seen in the discussion above, the study of 'others' architectures requires more than a simplistic Euroamerican dominated architectural history, and in doing so, the addition of a multidisciplinary set of skills, which in the case of the authors above includes folkloricism, anthropology, and historicism, among others. The understanding gained from this historiography set the tone for the research and analysis undertaken in this dissertation.

Conclusions

This chapter has presented the theoretical development of VAS in relation to the theoretical evolution of the discipline of 'architecture' itself and in relation to the 20th Century development of fields like cultural geography and anthropology. Consequently, the chapter has shown that the study of vernacular architectures was never a serious undertaking in the history and development of Euroamerican architectural theory. There were however moments when, for example, Alberti in the Renaissance and the vernacular-revival periods of the late 19th Century, architectural theorists called for a more serious epistemological relationship between vernacular architectures and mainstream architectural practice. Additionally, the chapter demonstrated that in the early 20th Century a critical junction in VAS history occurred with the rise of the Modern movement in architecture. The modern represented a shift in architectural style, which reflected new technologies, materials and production systems with the result that vernacular knowledge systems and production processes were banished to the realm of obsolete. History shows that the lack of mainstream architectural interest in VA scholarship in the early 20th Century was more than accommodated through the rise of social science disciplines during that time. As a result, it was the disciplines of anthropology, cultural geography and history that have been responsible for the refinement of vernacular architecture discourse and scholarship during the 20th Century. Moreover, the chapter has revealed that the homogenous Euroamerican beginnings of VAS were challenged in the late 1960s through the work of Rapoport, Oliver and others when the field moved into the cross-cultural realm.

In tracing this historical development, the chapter highlighted the subjective nature of defining the term 'vernacular' in the Euroamerican architectural history and theory tradition, and has shown that due to this subjective history, and its designation as a separate category of architecture outside mainstream architectural discourse, the 'vernacular' remains a politically charged research field. Likewise, the chapter exposed the history of the Euroamerican architectural tradition to be a continual revaluation and reinterpretation of architectural theory with each new stylistic era. This 'architectural identity crisis' reflected the ever-changing historical and cultural context, and typically used the 'vernacular' traditions of 'Others' (non-Euroamericans) to assist in redefining what architecture was not, and not necessarily what it was with each generation. Occurring as early as Vitruvius, this 'definition-making' was politically motivated in order to establish difference and indirectly assert dominance

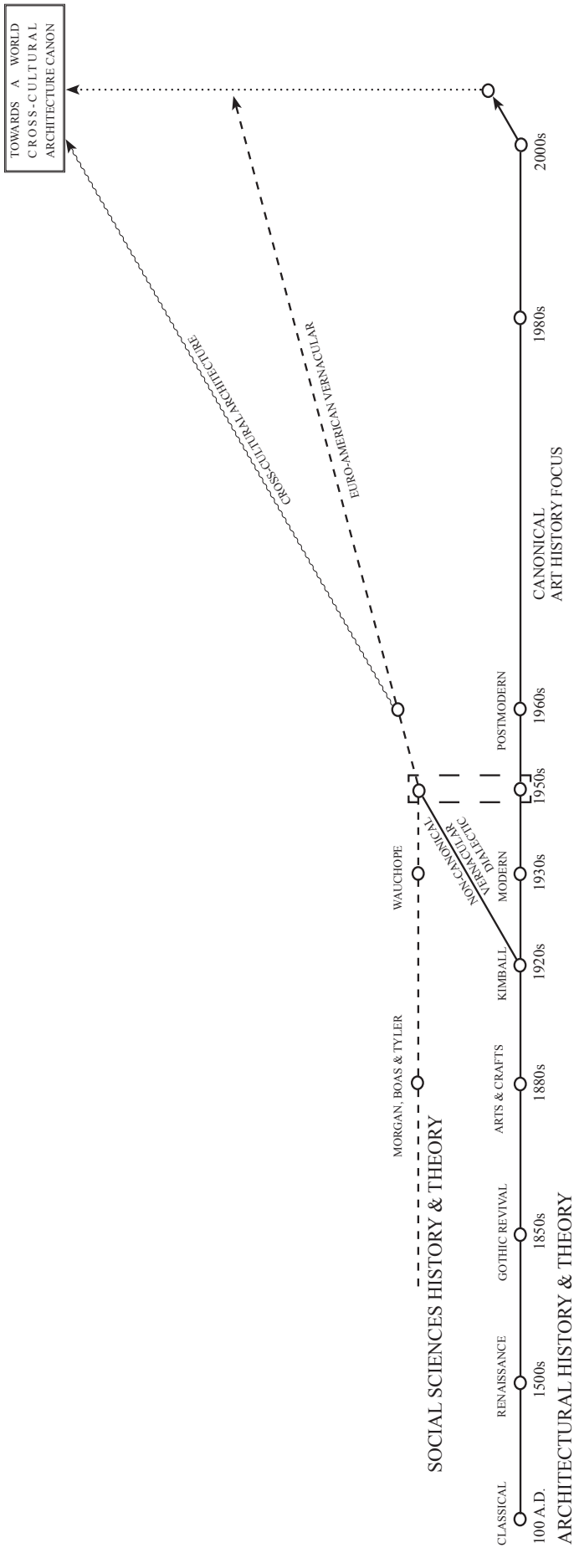

FIGURE 2.1: Hueristic model of the history of Vernacular Architecture Studies in parallel with the history of Architectural Theory

Chronology of Vernacular Architecture Studies			
Architects		**Social Scientists (Anthropologists etc)**	
100 B.C.	Vitruvius (Classic)[183]		
1500s	Alberti (Renaissance)[184]		
1600s	Palladio (Renaissance)[185]		
		1790s	John Smith (Architectural Ethnographer)[186]
1830s	August Welby Pugin (Gothic Revival)[187]		
1830s	George Gilbert Scott (Gothic Revival)[188]		
1850s	John Ruskin (Gothic Revival)[189]		
		1861	Reverend J.L. Petit[190]
1860s	Gottfried Semper (Anthro-Architect)[191]		
1891	Ralph Nevill (British Arts & Crafts)[192]	1877	Lewis Henry Morgan (American archaeologist)[193]
1895	Norman M. Isham & Albert Brown (American)[194]	1897	Henry Chapman Mercer (American)[195]
1930s	Le Corbusier (Modernism)[196]		
1940s	Hassan Fathy[197]	1938	Robert Wauchope[198]
1957	Sibil Moholy-Nagy[199]	1947	Levi-Strauss[200]
1964	Bernhard Rudofsky[201]	1964	Cunningham[202]
1969	Amos Rapoport[203]	1969	Paul Oliver[204]
1971	Christian Norberg-Schulz[205]		
		1972	Mary Douglas[206]
		1972	Henry Glassie[207]
		1977	Pierre Bourdieu[208]
		1978	Enrico Guidoni[209]
1978	Ronald Brunskill[210]	1979	Colin Duly[211]
1983	Dell Upton[212]	1984	Netting Wilk & Arnould
1986	Hassan Fathy[213]	1985	Hugh-Jones[214]
1989	J.P. Bourdieu & N. AlSayyad[215]	1987	Paul Oliver[216]
1990	Amos Rapoport[217]	1987	Suzanne Preston-Blier[218]
1992	Nold Egenter[219]	1990	Roxanna Waterson[220]
1993	Dell Upton[221]	1995	Carsten & Hugh-Jones[222]
1996	Bill Hillier[223]	1997	Paul Oliver[224]
1996	Paul Memmott[225]	1997	Roxanna Waterson[226]
2000	Howard Davis[227]	2000	Joyce & Gillespie[228]
		2000	Henry Glassie[229]
		2001	Amerlinck[230]
		2003	Paul Oliver[231]
		2006	Asquith & Vellinga[232]
		2006	Paul Oliver[233]
2007	Dell Upton[234]		
2008	Davidson & Memmott[235]		
2009	Davidson		
Anthropological Architecture & Architectural Anthropology			

TABLE 2.1: Historiography of the major scholars who have influenced the historical development and evolution of Vernacular Architecture Studies. The table is split into two streams, the architects on one hand and the social scientists on the other. The chronology details the dates for their major publications, as detailed in this chapter.

over the architectural manifestations of others. Vitruvius' use of Barbarian houses to demonstrated the superiority of Roman thought over 'Others' and set the foundation for the historical perception of the 'vernacular' as a distinct category of architecture, irrelevant to the representation of 'modern' humankind. This pejorative course of action continues to the present day in the realm of Euroamerican architectural discourse. The chapter also illustrated that since Vitruvian times, architectural history was epitomised by the rise and fall of many theoretical movements, demonstrating the difficulty in defining the human condition and its relationship to architecture; and leading to a continual pursuit for the 'modern' and a re-definition of 'architecture' at each historical moment. Each period grew as a reaction and rejection of the former, with older traditions being re-invented and transformed with each new generation.

Due to the current schism in theoretical responsibility, there is a current lack of architectural theory regarding vernacular environments and building practices in mainstream Euroamerican architectural discourse. In recognition of the dominance by non-architects over the last 100 years, it is the author's contention that VAS requires a unifying theory of architecture which reconnects with its interdisciplinary origins, to move forward in challenging the theoretical dominance of the Euroamerican art history tradition in architectural discourse. As such, in moving towards a unified world architecture canon, the cross-cultural experience is not a search for architectural motifs but conceptual models for a natural relationship between society and its artefacts (architecture). An understanding of cross-cultural architecture gained through the combination of anthropological and architectural methods is a search for principles and understandings of people-built environment relations rather than nostalgic aesthetics among the architecture of all societies and cultures in the present day.

Arguably, the term 'vernacular' is too political and broad a category to be theoretically useful in cross-cultural architectural research. As such, Maya houses are not referred to as vernacular in this thesis, and instead follow Morgan in the 1880s in giving explicit reference to 'house' 'architectures'. The next step in this thesis argument is to illustrate what contribution a study of Maya house traditions can make to the debate surrounding world cross-cultural architectural research, and the unification of the human architecture canon.

Endnotes

[1] There are other periods, for example, the early, mid and late Gothic (13th to 15th Century) which relied heavily on 'vernacular' architectures, however, the literature review showed this period to be lacking in theoretical introspection.
[2] P. Oliver, *Encyclopedia of Vernacular Architecture of the World*, 3 vols. (Boston: Cambridge University Press, 1997), xxi.
[3] (Oxford English Dictionary 2006.)
[4] *The Macquarie Dictionary*, (Sydney: Macquarie Library, 1989), 1893.
[5] Online Etymology Dictionary, "Vernacular," http://www.etymonline.com/index.php?term=vernacular.
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[9] (Lethaby 1929: 9 after Perrot and Chipiez)
[10] See for example, *De Re Aedificatoria* by the Italian architect Leon Battista Alberti in 1485, the first published book on architecture which takes its inspiration from *de architectura*; others works include *I Quattro Libri dell'Architettura* (The Four Books on Architecture) by Andrea Palladio published in 1570.
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[23] F. Borsi, *Leon Battista Alberti* (Oxford: Phaidon, 1977), 12.
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[32] P. Collins, *Changing Ideals in Modern Architecture, 1750-1950* (Montreal: McGill-Queen's University Press, 1998), 176-78.
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III
Method: Towards an Anthropological Architecture

There was great difficulty involved in researching a relatively unknown topic in a study region undergoing dramatic transformations of its built environment, which is now only just rising from the ashes of a 28-year civil war. The complexities of this situation necessitated a non-linear research process, evoking an 'inductive' fieldwork methodology capable of withstanding an evolution of its original aims during empirical analysis. The qualitative research approach presented herein was designed to respond to this situation by overlapping the methodological and theoretical boundaries of two principal disciplines, namely architecture and anthropology. In moving towards an anthropological architecture, the researcher established an interpretive field of inquiry that could be easily transposed between architecture and anthropology, and useful to sub-disciplines such as environment-behaviour studies (EBS) and people-environment relations (PER). In accordance with Denzin and Lincoln's explanation in the *Handbook of Qualitative Research* of interpretive activities and qualitative research, this investigation "...privileges no single methodological practice over another".[1]

Evidently, the reason for choosing anthropological theory as a supplementary research paradigm, in addition to architectural theory and method, lay in the limitations of the author's architectural education, which was founded heavily in the Euroamerican 'modernist' aesthetic tradition. Initial research activities illustrated that additional methodological approaches were necessary to conduct cross-cultural research of a subject matter that was poorly defined in relation to the author's academic/cultural history. The author attempted to capture the missing methodological fragments by drawing from the field of anthropology, which complements the architectural investigation of human artefacts through the study of human behaviour. As the interdisciplinary research progressed, the synthesis of architectural and anthropological approaches proved invaluable in a cross-cultural understanding of the relationship between the physical manifestation of the built environment in supporting human beliefs and their associated behaviours. As Schefold in the *Encyclopaedia of Vernacular Architecture of the World* states:

> In view of all the various ways in which both architects and anthropologists have begun to discover vernacular architecture as a promising field of study, one would expect that representatives of both disciplines would join efforts to profit from each other's specialist expertise. Strangely enough such interdisciplinary teamwork has up to the present hardly materialized…interdisciplinary teamwork can serve both parties: to architects it can provide guidelines on how to modify their western-based manner of documentation in order to do justice to local notions and principles of building, to anthropologists it can furnish a more adequate formal basis for their interpretations and even deliver cues for the recognition of structural peculiarities not immediately obvious to the unskilled eye.[2]

For an architect working in a cross-cultural context, there was tangible value in moving beyond the conceptual realm of commonly understood Euroamerican academic architectural theory, which as discussed in Chapter 2 has a history of ignoring architectures outside its own historical and cultural

context. As described in Chapter 1, the value of an anthropological approach to architecture lies in seeing architectural phenomena in a broader sense relating to the entire compendium of human constructed endeavours and social evolution. The main aim of this research was to ethnographically record the remaining ancient Maya house architectures and investigate the processes and influences of their transformations in contributing to a cross-cultural understanding and theory of architecture. Accordingly, this chapter is structured into four main sections, beginning with a literature review, followed by a presentation of the fieldwork program, and concluded by the ethnographic methods associated with the research.

Inductive *Bricolage* in Cross-cultural Architectural Research

In light of the difficulties associated with this cross-cultural research agenda, two methodological phenomena rose to prominence. The first was the realisation at an early stage in the fieldwork process that in order to proceed effectively, the researcher had to be open to all observable phenomena, and allow things to be discovered versus hypothesising from a set of *a priori* assumptions. The research became one of discovery and not prediction, described in methodological theory as 'induction' that sits in methodological opposition to 'deduction'.[3] Looking back on this research, it would have been a fallacious undertaking to approach cross-cultural research in a foreign environment from an *a priori* ethnocentric position. The complexities of the study region, its peoples and histories, would never have allowed a simple deductive process. As more knowledge was gained, the research topic changed before, during, and after fieldwork. Informants had great input into the overall epistemology and theoretical framework of the thesis, which was shocking to the researcher at times, and led to greater understandings of the research subject itself. In attempting an anthropological approach to architecture, the inductive method appeared to be the most informative, and at times, the most risky approach.

In the *Present Relevance of the Primitive in Architecture*, Egenter based the inductive method on the sensory perception of concrete phenomena in deriving generalisations and scientific assumptions in the formulation of theories and general rules about the phenomena being investigated.[4] Egenter showed that deductive methods proceed from a theoretical top-down approach, and in terms of the history of cross-cultural research, the deductive approach was "broken down on various fronts under the impact of all the worldwide cultural information about non-European races, populations and cultures that reach Europe since the time of the great discoveries."[5] Moreover, Egenter was sceptical of deductive judgements based on the researcher's cultural content when observing and interpreting cultural content from another cultural and historical context.[6] In relation to cross-cultural architectural research he states:

> Seen in terms of methodology, architecture, theoretically considered in anthropological dimensions brings something decisive, namely a theory which proceeds inductively...inductive procedure implies precise definition of the object field which is to be theoretically researched. In contrast to conventional theoretical approaches, the procedure is reversed. No aprioris are imported from outside, there is no longer any deduction from aesthetic aprioris; symbolical or cosmological findings are no longer explained from standpoints of the history of religions. Instead the defined objects, described empirically are documented by criteria imminent to architecture, such as the materials used, types of construction, resulting form, spatial and temporal conditions, social relations etc.[7]

The second methodological concept that has proven useful to the present study is that of *bricolage*, the French term for 'weaving' or 'quilt making' whereby a *bricoleur* is a person who uses "the tools at hand" to achieve the desired outcome.[8] Claude Levi-Strauss developed the concept of *bricolage* in the 1960s with the publication of *The Savage Mind*.[9] At the time, Levi-Strauss was intent on illustrating the difference between Euroamerican 'scientific' thought and non-Euroamerican 'mythical' thought in the study of people-environment relations.[10] He pointed out that *bricolage* is a temporal process, which evolves through personal experiences combined with certain techniques developed to help understand the question at hand. When one methodological thread fails to explain the situation at hand, the *bricoleur* can add another to help complete the methodological patchwork. The disadvantage in this approach lies in not finding the right thread or approach during the fieldwork process. Denzin and Lincoln in the *Handbook of Qualitative Research* state:

> The methodological *bricoleur* is adept at performing a large number of diverse tasks, ranging from interviewing to intensive self-reflection and introspection…The researcher-as-*bricoleur*-theorist works between and within competing and overlapping perspectives and paradigms. The interpretive *bricoleur* understands that research is an interactive process shaped by his or her personal history, biography, gender, social class, race, and ethnicity. [11]

In light of the cultural and historical context of the study region, the researcher felt it was necessary to use both induction and *bricolage* in order to enhance the research agenda. These approaches were complementary in that while induction led to the researcher being open to discover facts, *bricolage* gave the freedom to invent new tools for understanding when required. Subsequently, the described method in this chapter was defined at the conclusion of the fieldwork process and not before. In recognition of the shifting cultural and historical landscape in the study region itself, the researcher was constantly shifting methodological focus. Each language group presented its own challenges with no two of the 28 languages exhibiting the same social, political and cultural situation.

Salvage Architectural Ethnography

The fieldwork paradigm chosen to support the main research objectives was founded in the descriptive anthropological tradition of ethnography. Graue describes ethnography as "loosely applied to any qualitative research project whose purpose is rich description" whereby "the ethnographer goes beyond reporting events and details of experience and works to explain how these represent the webs of meaning in which we live."[12] The word 'ethnography' itself is the combination of *Ethno*, which is Latin for 'culture' and *Graphy* – 'writing', the ethnographer, therefore, records culture. In terms of the overall framework of this thesis, the ethnographic method proved a complementary foil to the nonlinear inductive process of *bricolage*.

> Because ethnography is both a process and a product, ethnographer's lives are embedded within their field experiences in such a way that all of their interactions involve moral choices. Experience is meaningful, and human behaviour is generated from and informed by this meaningfulness. Because ethnographers traverse both territorial and semantic boundaries, fashioning cultures and cultural understandings through an intertwining of voices, they appear heroic to some and ludicrous to others. They are cross-dressers, outsiders wearing insiders' clothes while gradually acquiring the language and behaviours that go along with them.[13]

In recording the knowledge systems related to Maya house architectures, techniques were employed that combined architectural documentation processes (measured drawing) with photographic techniques, linguistic analysis and structured or semi-structured interviewing. Best termed 'salvage architectural ethnography', the value of this approach lay in its eventual convergence with empirical historical method, and its emphasis on primary archival sources and measured architectural drawings in an attempt to understand past traditions that are currently passing away. Efforts were made to locate neglected traditions of Maya house architectures in order to bring them into the circle of human social and cultural consideration, and understand their aesthetic dimensions and their *raison d'être*.

The author employed architectural method to document the remaining house architectures. This method emulated the work presented in Wauchope's original thesis, and composed measured drawings of each individual house as well as an analysis of its environmental (climatic/geographic) significance and use of locally available resources. The architectural documentation consisted of plans, sections, elevations and photographic records of each individual house. The residents of each dwelling were interviewed to establish the constructional process and domiciliary significance of the house's form, as well as establish the name sets for the structural elements of the house, again emulating Wauchope's original work. Whilst conducting fieldwork, house architectures observed were comparatively analysed in relation to their similarities and differences. In addition, this method assisted in the investigation of influences underscoring the transformation of house architecture. Generally, the research approach before, during and after fieldwork was to collate as much information

on linguistic distributions (with maps); observe the geographical significance of locations; and the history of each language group (pre- and post-contact). As such, the categories for analysing the physical architectural form were:

- Settlement patterns and systems (including inter-village relationships)
- Architectural configuration of family compounds
- Regional variation and geographical distribution of house form
- Site layout and selection, including location and orientation
- Climatic significance of house form
- Building typologies including dominant features
- Commonalities of house form configuration and associated behaviours
- Commonalities of belief systems related to house form configuration and use
- Construction practices including floor plan configuration
- Structural members, including sizes, spacing and tie-down methods
- Linguistic associations of traditional names of structural members
- Categories of Construction permanence versus non-permanence
- Construction Members: sizes, spacing and traditional names
- Construction techniques, documented through architectural plans, sections, elevations and details of each house
- Construction details of the major elements of each house, including floors, footings and wall finishes
- Construction procedures, including site selection, foundation set-out, wall, structural posts, roof, and thatch set-out details, and the choice and preparation of building materials
- Material selection: schedule of members and/or materials; preparation of materials and components.

In addition to the preparation of architectural plans, sections, elevations and details, the documentation process involved measured drawings, photographic recording of overall architectural form and specific details. At times, the owners of the house, and their children, would assist in holding the tape while the researcher noted figures in the fieldwork journal. Such small, shared activities gave time to talk about the historical significance of recording the house and other points of interest such as socio-spatial behaviours, the environmental significance of the architectural form, the semantic significance of the

house form, the cultural significance of the construction process, as well as the impact and future of architectural transformation of the traditional houses. Pavlides in the *Encyclopedia of Vernacular Architecture of the World* underscores the importance of architects being involved in cross-cultural architectural research:

> Architects, being familiar with building methods, are in a position to use construction processes as criteria in recording and evaluating vernacular buildings. Construction materials and technologies can be examined for their economy, durability and efficiency in achieving various architectural objectives. Finally because of their training and experience, architects bring to the study of vernacular architecture a special ability to understand and assess the building's components complex interrelationships, and its resulting qualities and the relationship of these qualities to possible users.[14]

Post-fieldwork production of the architectural documentation included firstly the drafting of the measured drawings with the aid of computers (CAD); these were then treated as the base documentation for a secondary process, which involved free-hand pen and ink tracing over of the original CAD set in order to better evoke the physical qualities of the houses documented. More than 350 images CAD and hand drawn images were produced in order to appropriately convey the scale, proportion and material qualities of the physical house form. The hand drawn method was chosen for the final presentation drawings as the style evokes a more natural character, being reminiscent of the actual quality of the houses documented.

Qualitative Interviewing

The researcher employed anthropological methods to investigate the changes that have occurred to Maya housing traditions since the 1930s. In order to establish the reasons underlying the changes to the traditional built environment, the research project utilised interview techniques in conjunction with photographic archival examination (visual anthropology) to analyse transformations to the socio-spatial patterns and material culture associated with each dwelling through time. Whilst in the field, a number of Maya informants had direct involvement in framing the questions to be asked, resulting in four streams of interviews linked to four separate groups of informants. The first stream referred to those Maya peoples (non-academically-trained) who were living in the traditional houses documented during fieldwork. Stream 1 Questions related to the value of traditional house architectures, and the influences underscoring the transformation of these traditions. In total, the researcher conducted 42 interviews with *campesinos* from all Maya language groups.

The second stream of interviews referred to those Maya peoples who had received formal academic training usually at a tertiary level at some point in their life. Stream 2 Questions sought to identify the architectural transformation process and supplemented questions of contemporary Maya identity, foreign housing projects, and the advantages and disadvantages of traditional housing

in comparison to these 'newer' forms of housing. In addition, the researcher conducted a post-occupancy evaluation of Habitat for Humanity housing (an American Aid-agency) in order to discuss impacts of Euroamerican-directed change on traditional housing stock. This series of field interviews established the contemporary significance of Maya domiciliary traditions, while an extensive review of anthropological and archaeological literature ascertained the historical importance of the Maya domicile.

> Asking questions and getting answers is a much harder task than it may seem at first. The spoken or written word has always a residue of ambiguity, no matter how carefully we report or code the answers. Yet interviewing is one of the most common and powerful ways in which we try and understand our fellow human beings.[15]

During the course of fieldwork, the author realised that the contemporary building 'traditions' and practices of each of the Maya language groups listed exhibited distinct methods of construction. It was also evident that each group displayed a distinct differentiation in cultural change phenomena, and it was therefore, more advantageous to concentrate on the transformations encompassing all language groups rather than analysing one specific group. Through such a broad analysis, one could establish a comprehensive regional understanding of the influences related to building transformation, and thus produce a model of 'change', accommodating the transformation of Maya architectural 'traditions'. As Gonlin noted in *Rural Household Archaeology*, the benefit in studying the household through time and space is as that "it can be used as a measure of cultural change and an indicator of social norms."[16] Anthropological information gathered related to:

- Population demographics
- Understanding the major ethnographic investigations undertaken in the region
- Social organisation and kinship structures of each language group
- Lineage systems influencing house to settlement configuration
- Lifecycle of the traditional house in relation to behaviour patterns
- Socio-spatial significance of the house and related family compound
- Socio-religious significance of the house; and
- Communal practices related to house procurement methods

In order to understand the characteristics and processes of Maya building transformation, the author devised a series of interview questions to be asked of local 'informants' while in the field; these

questions reported to the particular built form in which the 'informant' lived. Again, the author conducted interviews with several informants in each given language region and involved interviewing people who had lived in a wide range of housing types, from adobe and tile to concrete block and sheet metal. During the process it became obvious that a minimum of six interviews per region were required for the process to be effective. The author translated the interview questions into Spanish, with all questions asked of the informants to avoid possible embarrassment if the person was unable to read or write.

It was an ethic imperative of the researcher that all interviews be anonymous, appropriate and respectful. From an early stage, it was important to be as inclusive of all personal positions as possible, and not exclude any member of the Maya community based on reasons such as lack of education, lack of interest, etcetera. Consequently, it was vital to devise a series of questions that could be asked of people from all 'walks of life' within the study region. Therefore, the study divided the interviews in the manner described in the previous paragraph due to different 'levels' of formal education, which resulted in splitting interviews into two fields. The first field related to those members of the Maya community who had not received high levels of formal education, while the second related to those Maya informants who had received higher formal education and continued in the academic field.

Initial 'conversations' were held with members of all 28 Maya language groups, with the first series of discussions (the non-academic) conducted in the *aldeas*, or small communities of rural Guatemala, Chiapas and Yucatán. Typically, these discussions were between the researcher and people who had either participated or were still participating in an agrarian lifestyle, and took place in the thatched houses themselves, out in the field while the individual continued to work, or on the numerous local buses that passed through all small towns and communities. All of these conversations occurred in a manner Frey and Fontana describe as natural, informal and spontaneous, whereby the interview is moderately non-directive and exploratory.[17] The researcher conducted the first set of interviews (or conversations) in early 2001 with members of the Yukatek, Itza', Mopan, Lakandon, Kekchi', Pokomchi' and Ch'orti' Maya, with the second set conducted in mid 2002 with individuals from the remaining linguistic communities. In accordance with the research agenda, the following four subject areas formed the basis for the informal conversations described above:

- The Process of Change
- Attitudes to Housing Traditions
- Contemporary Identity and the Traditional House
- Foreign Housing Projects (Directed Change Agencies)

With the respect to the grouping above, the first category investigated the direct influences affecting built environment transformation since the 1930s in Guatemala, Chiapas and Yucatán. The second explored how the Maya community viewed traditional houses at the time of the investigation, while the third discussed contemporary identity, domiciliary behaviours and belief systems. True to the inductive process described earlier, the fourth category evolved out of the previous two and examined the influence of foreign housing projects in Guatemala and Mexico. Altogether, the author carried out approximately 100 anonymous interviews, the findings of which indicated six other, more refined, points of interest, being:

- Attitudes toward Traditional Houses
- Attitudes to Change of Traditional Building Forms
- Influences of Change to Traditional Building Forms
- Foreign Housing Projects (Directed Change Agencies)
- Elements of Conserved Cultural Identity as Opposed to Building Traditions
- The Link between Traditional and Non-traditional Housing

In devising the interview agenda, the researcher prepared a series of questions to establish when definitive building transformation and change took place; what the major reasons for change were at the time; the advantages and disadvantages of traditional and non-traditional house forms; and opinions of architectural transformation within each language group. The researcher also conducted interviews with informants whose houses displayed an observable maintenance of traditional built form, were undergoing transformation, or displayed no observable traditional built forms (the complete lack of observable traditional methods of construction and materials). Furthermore, the investigator undertook a series of interviews with Maya academics and cultural activists in order to understand how the intellectual leaders of Maya culture viewed ongoing architectural transformation in their society. The research agenda at this point was to comprehend the similarities and differences between academics, activists, and laypersons in contributing to an overall understanding of Maya building transformation within the study region. It was also during fieldwork that the researcher interviewed a Maya *sacerdote* shaman from the community of Santa Maria de Jesus, south of Antigua Guatemala. This set of anonymous interviews related to traditional belief systems associated with the semantic significances of traditional Maya houses. In carrying out the 'academic' program in the offices of a number of Guatemala's Maya institutions and publishing houses, the interview process was somewhat formal, semi-structured and phenomenological.[18] Those Maya scholars interviewed worked for the following organisations:

- Centro de Investigaciones Regionales de Mesoamerica (CIRMA)
- Proyecto Linguístico Francisco Marroquín (PLFM)
- Oxlajuuj Keej Maya' Ajtz'iib' (OKMA)
- Centro de Documentación e Investigación Maya (CEDIM)
- Cholsamaj Publishing House
- Academia de Las Lenguas Mayas de Guatemala (ALMG)

During fieldwork, the author also undertook a Post-Occupancy Evaluation (POE) of Habitat for Humanity (HfH) housing, the largest North American-directed housing program in Guatemala, conducting over 40 interviews with the 'recipients' of HfH concrete houses. Ostensibly, the intention was to question whether 'directed' change actually worked to reduce poverty in such situations, and whether or not these 'aid' organisations respected the cultural customs that underscored much of the original socio-spatial patterns of Maya house traditions. Again, the author conducted interviews anonymously as residents were concerned that any record could create issues with HfH for future support. Chapter 7 details the POE findings in full.

Photographic Archival Analysis

While in Mexico, the author spent a week searching the photographic archives at the *Insituto Nacional Indigenista* (INI) in Mexico City. The INI proved a valuable resource for historical photographic evidence on Ch'ol, Tzotzil, Tzeltal, Tojolob'al, Chuj, Mam and Yukatek houses. The images located were taken over 50 years from the late-1940s to the mid-1990s. Images of actual houses proved difficult to find as the majority of photographs were of people undertaking particular activities. Houses were mostly in the background of the image, and therefore were rarely filed under 'Houses' in the archive, thus the archival investigation proved long and tedious. It was during Fieldtrip 2 that the author analysed the photographic archival records of a number of cultural and academic institutions within the study region and the United States of America, seeking evidence of traditional house architectures as well as processes of architectural transformation at the following institutions:

- Centro de Investigaciones Regionales de Mesoamerica (CIRMA), Antigua Guatemala, Guatemala: over 100 images of Maya dwellings in Guatemala from 1875 to present.
- Instituto Nacional Indigenista (INI), Mexico City, Mexico: over 100 images of Maya dwellings in Mexico from 1890 to present.
- Middle American Research Institute (MARI), Tulane University, New Orleans, USA: over 80 images of Maya dwellings from Guatemala and Mexico from 1880s to present.

The Centro de Investigaciones Regionales de Mesoamerica yielded the most information regarding the processes and influences of building 'change' within the Maya region. Certain photographs in the CIRMA collection dated back to the 1870s, and provided evidence that house architecture traditions were undergoing rapid and extreme 'change'. In conjunction with the photographical archival searches, the researcher also undertook an extensive search of 587 Maya-related thesis dissertations found in libraries throughout Europe and the United States of America. The findings of this research showed that there has been negligible comparative work undertaken on Maya dwelling traditions and building practices, underlining the importance of the present investigation as the first of its kind to attempt a complete regional survey of Maya house traditions.

Literature Review

The literature review was an imperative part of this qualitative research project, and informed fieldwork experiences as well as shed light on the history of the research subject. In a similar manner to the overall research methodology, the literature review was itself an evolving process that paralleled the theoretical transformations as the thesis progressed. The majority of information regarding Maya house traditions came from practitioners working in the fields of archaeology and anthropology, with little evidence of architects publishing research work in the Maya region. The author identified the following theoretical fields as necessary in the study and analysis of Maya house architectures, traditions and transformations:

- Cross-cultural Architecture Studies (Vernacular Architecture Studies);
- Architectural Anthropology (Architectural Semiotics & Nonverbal Communication);
- Pre-Columbian Maya Settlement Systems & Ethnoarchaeology; and
- Theories on Culture, Tradition and Change.

In relation to these theories, Chapter 2 of this thesis details the historiography of Vernacular Architecture Studies and its relationship to Architectural Anthropology (or conversely Anthropological Architecture), Chapter 4 draws on pre-Columbian Maya settlement history and theory as well as ethnoarchaeology. Chapters 5 and 6 detail architectural ethnography and semiotics respectively. Chapter 7 discusses culture change in relation to the transformations of Maya house traditions and its implications for the future of Maya built environments.

Ethnoarchaeology: Wauchope's Research

Of foundational significance for this research is an ethnoarchaeological investigation carried out in 1934 by Robert Wauchope as part of a Carnegie Institution sponsored field trip to Mexico and Guatemala. Above all, the purpose of Wauchope's research and subsequent publication in 1938 of *Modern Maya Houses* was to enlighten the archaeological profession of the day as to the significance of the house form for the determination of domiciliary remains within archaeological excavations. Wauchope's research stands today as a significant record of the traditional Maya house form. The current research aims to complement and enhance the work presented in Wauchope's investigation. Where the research diverges is on the comparative analysis of cultural change in the 70 years since Wauchope's work, and in the meaning associated with the traditional house form for Maya built environments.

Architecture & the Vernacular

Chapter 2 of the thesis explores the concepts underlying the creation and politicisation of terms such as 'architecture' and 'vernacular' in cross-cultural discourse in Euroamerican architectural theory. In drawing on authors such as Upton in "The Tradition of Change"[19] and Rapoport in *House Form and Culture*[20] the chapter describes the reification of 'ideals' in the cross-cultural observation of non-Euroamerican and Indigenous building 'traditions'. The work of other scholars including Oliver in the *Encyclopaedia of Vernacular Architecture of the World*,[21] Hillier in *Space is the Machine*,[22] Rudofsky in *Architecture Without Architects*,[23] Pavlides in "Architecture",[24] Glassie in "Aesthetic",[25] and Schefold in "Anthropological",[26] also in the *Encyclopaedia of Vernacular Architecture of the World*, support this debate.

Maya Cultural History

There were a number of texts and dissertations available in reference to pre-Columbian Maya history. Readings such as Andrews in *Maya Cities: Placemaking and Urbanization*,[27] and Schele and Freidel in *A Forest of Kings: The Untold Story of the Ancient Maya*,[28] describe the architectural qualities of many classic era Maya sites. The work of Coe in *The Maya*,[29] Proskouriakoff in *Maya History*[30] and Sharer in *The Ancient Maya*[31] illustrate pre-Columbian socio-spatial systems, behaviour patterns and belief systems. De Landa in *Relacion de las Cosas de Yucatán*[32] outlines Maya social behaviours and belief systems observed at the time of Spanish invasion, while *Incidents of Travel in Central America, Chiapas and Yucatán* by Stephens[33] is a classic text of some of the most well known pre-Columbian Maya sites, as seen during the 1800s.

Wauchope presented more contemporary ethnographies in *Modern Maya Houses*,[34] and in *The Handbook of Middle American Indians*,[35] Wisdom in *The Chorti Indians of Guatemala*,[36] Wilk in "Little House in the Jungle"[37] and Vogt in *Zinacantan: A Maya Community in the Highlands of Chiapas*[38]. These sources proved invaluable when combined with evidence from archaeological investigations such as Gonlin's *Rural Household Archaeology at Copan, Honduras*[39]. A number of works such as Everton in *The Modern Maya: A Culture in Transition*,[40] Hervik in *Maya People Within and Beyond Boundaries*,[41] Restall in *The Maya World: Yucatec Culture and Society, 1550-1850*[42] and Vogt in *The Zinacantecos of Mexico: A Modern Maya Way of Life*[43] offered discussions on contemporary cultural identity; while Carlsen in *The War for the Heart & Soul of a Highland Maya Town*[44] presented a more recent ethnography of Maya culture and social history in a small community of Guatemala.

Maya Semantic Associations

In compiling a model of the cosmological significance of Maya domiciliary architecture, the author has drawn together data gathered during fieldwork and combined it with information from the literature, in particular the work of Freidel, Schele and Parker in *Maya Cosmos: Three Thousand Years on the Shaman's Path*,[45] Taube in "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple",[46] Schele (1992) in *A Forest of Kings: The Untold Story of the Ancient Maya*,[47] Tedlock in *Time and the Highland Maya*[48] and *Popol Vuh: The Maya Book of the Dawn of Life*,[49] Sosa in "Cosmological, symbolic and cultural complexity among the contemporary Maya of Yucatan",[50] Gillespie in "Maya "Nested Houses": The Ritual Construction of Place",[51] Carlsen and Prechtel in "The Flowering of the Dead: An Interpretation of Highland Maya Culture",[52] Demarest in *Ancient Maya: The Rise and Fall of a Rainforest Civilization*[53] and Aveni in *World Archaeoastronomy*[54]. The model developed relies on information drawn from a number of different fields including, archaeology, ethnoarchaeology, ethnohistory, anthropology, linguistics, and architecture. No one source speaks about Maya domiciliary cosmology in its entirety, but many speak of particular aspects which can then be combined for a better understanding.

Fieldtrip 1(November 2000 to February 2001): Discovery

Other than establishing rough methods for fieldwork investigation, preparation for Fieldtrip 1 consisted of comprehending the theories relating to the thesis topic, which at the time related to the historiography of VAS as adjunct to the realm of architectural history and theory. In addition to this, the researcher spent time evaluating the interaction between architectural traditions and cultural change processes. Fieldwork began with a very rough research plan; at the time, the researcher was living in eastern Yucatán, and therefore began the research program in the small community of Cobá, Quintana Roo. The Cobá experience confirmed that the best way to approach Maya communities was in an open yet indirect manner. For example, at Cobá, the local community administration advised as to the best place to set up the tent, which happened to be adjacent to the basketball court in the

centre of town. This exposure meant that people were aware of where the researcher was at all times, and could trust that he was not there for clandestine purposes. This 'openness' became the method in approaching all communities in the study region; by first getting to know people and then gradually asking questions about their houses.

Transport throughout the region was either by local bus or by hitchhiking. The general approach was to arrive at a particular community, ask which language people spoke (most would answer Spanish and then speak to others around them in a Maya language) and then proceed to ask if people knew of the existence of *casas de paja* (thatch houses) or *casas tradicionales* (traditional houses). Most people spoke Spanish, which helped, although the majority would not identify themselves as Maya. Children were usually the first to speak asking various questions, which they would then report to their mothers who were keeping a watchful eye from within their houses. Once the information had been conveyed via the children, the adults would generally begin to interact on a personal level, after which the documentation and interviewing process could begin. Due to the rapid and dramatic change throughout the study region, it proved difficult to locate houses without the assistance of local informants.

After documenting Yukatek houses in the Yucatán, the author then travelled to the Chiapas highlands of southern Mexico in search of Tzotzil, Tzeltal and Ch'ol Maya houses. It was during a visit to San Cristóbal de Las Casas that the author met the anthropologist and linguist Robert Laughlin, who had lived, worked and studied in the Chiapas region since the 1960s. Robert's advice made an invaluable contribution to the present research plan in advising firstly, not to count dwellings as it would appear suspicious and raise speculation that the author was there to count for taxation purposes; secondly, have a good reason to visit a house, do not just simply walk up and start talking, otherwise it might again be seen as suspicious; thirdly, do not walk alone in unpopulated areas, another cause for suspicion, could also thought to be witchcraft; fourthly, it was important to get all the names in Spanish and the local names correct, in terms of spelling and significance; and finally, do not talk to teachers as they are mostly biased against the Indigenous and typically disrespect the culture. Chiapas proved less fruitful than the Yucatán in locating traditional houses due to greater difficulties accessing remote communities, and greater built environment transformation. On leaving Chiapas, the researcher travelled across the Usumacinta River and into Guatemala; the following house architectures were document during fieldtrip 1:

- Yukatek, Cobá, Quintana Roo, Mexico (bajareque, sascab, composite)
- Yukatek, Chemax, Yucatán, Mexico (pakluum)
- Kekchi' (Lowlands), Chimay, Petén, Guatemala

- Kekchi' (Midlands), Tonten, Alta Verapaz, Guatemala
- Pokomchii', Las Pacayas, Alta Verapaz, Guatemala
- Mam, San Martín Sacatepecuez, Quetzaltenango, Guatemala
- Itza', San Andres, Petén, Guatemala
- Kaqchikel, Los Encuentros, Sololá, Guatemala
- Ch'orti', Tunuco Abajo, Chiquimula, Guatemala

Fieldtrip 2 (February 2002 to October 2002): Consolidation

The ten month pre-Fieldtrip 2 period (March 2001 to January 2002) entailed completing my PhD confirmation, recovering from the existential crisis from Fieldtrip 1, undertaking an extensive literature review on the thesis subject, and designing the methodological approach to be used during Fieldtrip 2. As stated above, fieldtrip 1 was a process of discovering the research topic. In approaching the research in a more concise manner, Fieldtrip 2 was designed to consolidate the thesis investigation. The following is a list of desired outcomes from fieldtrip 2 that were prepared prior to, and during the second trip to the study region.

- Produce a guide of the distribution of the twenty-eight existing 'traditional' house architectures.
- Compile a list of useful things for data collection on the 'traditional' house forms being recorded, look for variables such as: maps of settlements, settlement plan, settlement characteristics, record village names, population size, discernible building type, repeated elements, groups, family names, patterns, physical markers, belief systems, local economy, politics and religion, neighbouring groups (comparing and contrasting).
- Compile a list of variables related to the maintenance of 'traditional' house architectures within the study region, such indicators are: historical accounts such as photographic evidence from reliable anthropological sources; architectural techniques related to the documentation of physical characteristics of Maya dwellings within the region.
- Compile a list of variables which are observable indicators of 'change' related to contemporary 'traditional' Maya building practices, such as: syncretism, evolution, and diffusion of contemporary building form; adaptation of traditional materials to contemporary industrial systems; adaptation of contemporary materials to traditional systems.
- Compile a list of variables which are observable indicators as to the influences of building 'change' within the study region related to: globalisation, tourism, environmental degradation, urbanisation, economic viability and government settlement policies.
- Compile an interview schedule to measure variables related to the maintenance of 'traditional' building practices, as well as the influences of 'change' among such practices.
- Develop a building classification system based on the 'change' being experienced within the region,

specifically: traditional, semi-traditional, non-traditional.

- Identify and contact specific local historians and reliable local 'informants'.
- Source relevant material from libraries, museums, and other cultural institutions in the study region.
- Undertake an ethical approach to all participant observation and data collection: obtain ethical clearance from all relevant institutions; obtain suitable permissions regarding photography and the documentation process; give suitable explanations regarding research undertaken.
- Document field obstacles and limitations within the current research.

During this period, the majority of time was spent living, travelling and studying in Guatemala. However, the author did return to Mexico for a short time to again look for Tzotzil, Tzeltal, Tojolob'al, Ch'ol and Yokot'an houses; being unsuccessful in finding Ch'ol and Tojolob'al houses. Interestingly, having my wife with me proved advantageous when it came to gaining the trust of communities visited. It made access to houses easier, and while the author was measuring the house and speaking with the male members of the family, my wife was able to speak directly to the women of the house, and garner useful information from a woman's perspective of the socio-spatial properties of the house. The following house architectures documented during Fieldtrip 2:

- Tzotzil, Posuelo, Chiapas, Mexico
- Tzeltal, Pocolum, Chiapas, Mexico
- Yokot'an, Jalapa, Tabasco, Mexico
- Q'anjob'al, Santa Eulalia, Huehuetenango, Guatemala
- Akatek, Coya, Huehuetenango, Guatemala
- Popti', Huitzabal, Huehuetenango, Guatemala
- Mam, Todos Santos Cuchumatan, Huehuetenango Guatemala
- Mam, Aldea San Luis, San Marcos, Guatemala
- Sipakapense, Tres Cruces Sipacapa, San Marcos, Guatemala
- K'ichee', Media Luna Chimul, Quiché, Guatemala
- Ixil, Chajul, Quiché, Guatemala
- Pokomam, San Carlos, Alzatate, Jalapa, Guatemala
- Tz'utujil, Santiago Atitlán, Sololá, Guatemala

- Achi', Rabinal, Baja Verapaz, Guatemala

Conversely, the following is a list of Maya groups where traditional houses were *not* located during either course of fieldwork; further research may locate some of these houses while others may be lost to the ravages of time:

- Ch'ol, Tumbala, Chiapas, Mexico
- Lakandon, Nahá, Chiapas, Mexico
- Tojolob'al, Tziscao, Chiapas, Mexico
- Kekchi', Campamento Unión, Belize
- Kaqchikel, Santa Maria de Jesus, Sacatepecuez, Guatemala
- Awakatek, Aguacatán, Huehuetenango, Guatemala
- Chuj, San Mateo Ixtatán, Huehuetenango, Guatemala
- Tektitek Maya, Tacaná, San Marcos, Guatemala
- Uspantek, Uspantán, Quiché, Guatemala
- Sakapultek, Sacapulas, Quiché, Guatemala
- Tz'utujil (rectangular house), Santiago Atitlán, Guatemala

As discussed previously, the refinement of the research topic and methodology took place while in the field. Once the major aim of producing a regional survey of house architectures was in place, the discovery of pan-Maya commonalities could commence. Certainly, the more data collected of language-specific house architectures, the more obvious certain connections became between different language groups. Wauchope's research in the 1930s had not discussed pan-Maya commonalities in any great depth, and, as a result, the current author saw an opportunity to make a serious addition to the body of knowledge in relation to Maya house traditions, the transformation of house architectures, and cross-cultural architectural studies in general.

Conclusion

With the research field and subject matter defined, the thesis methodology was devised to support the main aims and objectives of the research project, namely, the ethnographic recording of the remaining ancient Maya house architectures and investigation of the processes and influences of their architectural transformation in the seventy years since Wauchope's 1930s survey. Before presenting the results of the author's regional survey, it is important to establish the historical foundation of Maya house traditions, thus, the subsequent chapter details the history of Maya house architectures.

Endnotes

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[4] Ibid., 55, 81.
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[6] Ibid.
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[8] Denzin and Lincoln, eds., *Handbook of Qualitative Research*.
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IV
A History of Maya House Architectures

The following abridged description of Maya history outlines the current state of knowledge on Maya cultural history from their origins to the present day, and positions the history of Maya house architectures within the broader cultural history of the Maya peoples. Supporting evidence is drawn from Mayanist literature in the fields of anthropology and archaeology.

Origins of the Maya and Pre-Columbian Cultural History

Much of ancient Maya history has been reconstructed through archaeological interpretation and ethno-historical texts (codices) written by the Maya peoples themselves. In pre-Columbian times, the location of the Maya realm in southern Mesoamerica meant that its political, social and religious history was intertwined with its Mesoamerican neighbours, the Toltec, Olmec and Aztec (Mixtec). As Sharer states in *The Ancient Maya*, "…we will do well to remember that the ancient Maya civilization originated and prospered, not in isolation, but in the context of conditions and events scattered across the breadth of Mesoamerica and, ultimately, the entire New World."[1] There is much academic conjecture as to the origins of the Maya peoples. Currently, the commonly accepted position is that Maya ancestors originated in Central Asia and travelled to Mesoamerica via the Bering Strait connecting present day Asia with North America during the last Ice Age.[2] The precise timing of this migratory event is unknown; however, various sources believe it to have occurred at least 12,000 years ago.[3] Archaeologists have identified three major Pre-Columbian time periods in the florescence of Maya political and social development, including the Preclassic (2500B.C.-A.D.250), Classic (A.D.250-1000), and Postclassic (A.D.1000-1519), which shall be outlined briefly here.

Preclassic (ca.2500B.C.-250A.D.)

According to the archaeological record, the Preclassic period is divided into four separate sub-periods, including the Early (2500-1000 B.C.), Middle (1000-400B.C.), Late (400 B.C.-A.D.100) and Protoclassic (100-250 A.D.). Early Preclassic civilisation occurred primarily along the Pacific Coastal piedmont and marked the transformation of Maya cultures from hunter-gatherer lifeways to more sedentary agrarian-based forms of settlement.[4] The Middle Preclassic saw a marked growth in agricultural production and the expansion of Maya settlements throughout the region as well as greater political and religious complexity and increased interaction between the Maya and their Mesoamerican neighbours.[5] Archaeological evidence shows that the establishment of settlements throughout the Highlands and Lowlands of the Maya region occurred during the Late Preclassic period, coinciding with the development of a distinctive dispersed form of settlement whereby large-scale temple and palace complexes were the core religious and administrative centres for smaller-scale peripheral communities.[6] The Protoclassic period was a time when the establishment of dominant ceremonial centres utilising stucco and rubble for decorations as well as new forms of ceramics (polychromatic finishes) for interior furnishings.[7] Giving rise to the 'Classic' period of Maya social

and political development, the Protoclassic period witnessed the decline of the southern highland Maya and the rise of the northern lowlands, located in present-day Yucatan and Chiapas.[8]

Classic (250-900 A.D.)

The archaeological record divides the Classic age into the Early (250-600 A.D.), Late (600-800 A.D.), and Terminal (800-900 A.D.) periods.[9] The Early Classic period observed dramatic developments in technological, religious, political and artistic institutions.[10] Existing urban areas such as Tikal, Uaxactun and Kaminaljuyu in present-day Guatemala as well as Dzibilchaltun, Oxkintok and Acanceh in Yucatan underwent a heightened sense of social and political development. The Early Classic period saw the first recorded dates on Maya monuments[11] with evidence showing that the Central Mexican presence in the Maya region was strongest during the period 400 to 700 A.D.[12] The Late Classic period was a time of establishment and rapid growth for a number of major Maya cities – Labna, Kabah, Uxmal, Sayil and Chichen Itza. The Terminal Classic period saw the decline of Maya populations in the central Highlands and southern Lowlands.[13] There are many theories as to the reasons for this collapse, including climate change, population growth leading to the over-exploitation of natural resources, political upheaval of the lower classes, and colonisation from neighbouring Indigenous groups to name a few. Henderson, in *The World of the Ancient Maya* states: "New evidence has replaced the old idea of a sudden and total societal failure with a view of the 'collapse' as a long term process with multiple causes that transformed the political and economic order of the various regions of the Maya world in different ways at slightly different times".[14]

Postclassic (900–1519 A.D.)

According to the archaeological record, the Postclassic age is divided into the Early (A.D.1000–1250) and Late (ca. A.D.1250–1519) Postclassic periods[15] and characterised by the rise to dominance of Maya societies in northern Yucatan and Chiapas resulting in population increases, group migrations and increased military action. As Sharer explains: "The Postclassic has long been recognized in the Maya area as a period of 'Mexicanization,' a time when cultural traits from Central Mexico and other regions were increasingly incorporated into Maya art, architecture, ceramics, and the other products of culture recovered by archaeologists."[16] The Late Postclassic period witnessed the development of walled cities in the Maya world in response to greater military activities from within and beyond their regional borders. Such militarisation led to the collapse of Chichen Itza as the capital of Yucatan after being conquered by Mayapan, its northern neighbour and regional adversary.[17] Henderson in *The World of the Ancient Maya* discusses the likelihood of a pan-Maya belief system, which was the foundation for social and cultural variations throughout the region.

> Settlement systems, cities, and the social order they imply had always been generally comparable. Now monumental art, the stela complex, and writing had spread throughout the lowlands. A common basic belief system sustained social and political institutions everywhere. The symbol systems used to express these concepts were so similar from region to region that they almost imply a single Maya religion. On closer inspection, though, the apparent homogeneity of the Maya world dissolves into a kaleidoscopic picture of regional variations on the same set of basic themes...Styles of public architecture and architectural decoration show the same pattern of diversity within a single basic tradition.[18]

Pre-Columbian Maya history was one of social and political establishment, population growth, economic prosperity and societal decline over a long period of time. Archaeological and ethno-historical evidence has shown the transformation of human societies from initial hunter-gatherer lifeways through the establishment of dispersed subsistence settlements to the development of major administrative and religious centres and an eventual decline in national building activities prior to the arrival of the Spanish.

Maya Contact History: The Age of Colonisation

In 1519, the Spanish invasion of the Americas began with the arrival of Hernan Cortés to Mesoamerican shores, marking the beginning of a 500-year period of change, violent conflict and repression for the regions' Indigenous peoples. Not only did the Spanish have superior military technologies, but they were assisted in their conquest by the European diseases (such as smallpox) brought with them.[19] It is important to note that the Central American region was strategically significant to the overall control of the Americas. Known as *Las Tierras del Istmo* the region took over 300 years for the Spanish to establish administrative control with Indigenous uprisings still occurring in the 1850s and 1990s. The Yukatek were the first Maya group to make contact with Cortés on his arrival to the south-eastern shores of the Yucatan Peninsula. The historical record shows that 31 Maya languages groups existed at the time of Spanish contact with the majority of Maya cultural groups not subjugated until the year 1542.[20] Records show that on arriving to Tenochtitlan (present day Mexico City) Cortés proclaimed:

> But if you will not comply, or maliciously delay to obey my instruction, then with the help of God, I will enter your country by force; I will carry on war against you with the utmost violence; I will subject you to the yoke of obedience, to the church and king; I will take your wives and children, and make them slaves, and sell or dispose of them according to His Majesty's pleasure. I will seize your goods, and do you all the mischief in my power, as rebellious subjects, who will not acknowledge or submit to their lawful sovereign; and I protest that all the bloodshed and calamities which shall follow are to be imputed to you, and not to His Majesty, or to me, or to the gentlemen who serve me.[21]

Maya Contact History: Mexico

Until the creation of the modern nation-state of Mexico in 1810, the seat of government for the region of New Spain, resided in present-day Guatemala. During the years after the Spanish invasion of central Mexico, Yucatan and Chiapas were characterised by cultural ethnocide, and based on the religious whims of the Catholic bishops sent from Spain to purge the perceived idolatry from amongst the Indigenous inhabitants of the region. Franciscan bishop, Friar Diego de Landa, was personally responsible for the burning of thousands of Maya manuscripts, 27 'hieroglyphic rolls' and 5000 idols.[22] His actions in decimating the region's literary tradition continue to have ramifications in the present day for the understanding of pre-Columbian lifeways. Ironically, it was de Landa himself, 'the great destroyer of Maya cultural records', who, after an inquisition into his personal affairs by the Spanish crown, proceeded to write some of the most important books on Yukatek Maya customs and cultural practices. His book *Relacion de Las Cosas de Yucatan*, was written in 1566, and covers virtually every aspect of Maya life as it was in the 1560s from climate, houses, wedding and funeral customs, traditional foods, the Maya calendar and associated counting system.

Maya resistance to hegemonic forces in Mexico has continued to until the present time of writing this thesis. On 1st January 1994, a Maya group calling itself the Zapatista National Liberation Army (EZLN) militarily occupied the Highland Chiapas town of San Cristóbal de las Casas. It was a bold uprising catalysed by the implementation of the North American Free Trade Agreement (NAFTA) signed by Mexico, Canada and the United States of America, and seen by the Maya (Tzotzil, Tzeltal, and Ch'ol) as yet another form of repression this time by higher taxes and lower prices for the goods associated with their agrarian-based economies. As Carlsen, in *The War for the Heart and Soul of a Highland Maya Town* states: "The Mayas who took to arms in the mountains and jungles of Chiapas believed that they themselves were in danger of being adjusted, and that concessions such as these [NAFTA] constituted little more than a euphemism for the sacrifice of their already marginalized way of life and of any right to self-determination."[23] The EZLN seized several towns, kidnapped a number of local government officials and destroyed government offices. In spite of the Mexican military eventual suppression of the uprising, the instability was still present in the region during the current author's fieldwork.

Maya Contact History: Guatemala

Guatemala shares a similar political history to its northern neighbour Mexico, with both countries evolving from the colonial subjugation of a dominant non-Indigenous social and economic elite. At the time of writing, both Mexico and Guatemala had a mixed racial heritage (*ladino*) culture as the controlling governmental force. Similar to other Central American nations, in 1821 Guatemala took advantage of the Spanish defeat by the French emperor Napoleon to gain its independence, and has since struggled to attain a stable degree of internal governance.

> The history of the Guatemala since independence has been one of rivalry and struggle between the forces of left and right. The Liberals have historically wanted to turn backward Guatemala into an enlightened republic of political, social and economic progress. The Conservatives hoped to preserve the traditional verities of colonial rule, with a strong Church and a strong government. Their motto might have been 'power must be held by those with merit, virtue and property'. Historically both movements have benefited the economic elite and disenfranchised the people of the countryside, mostly Maya.[24]

In the *Encyclopaedia of World Cultures*, Levinson documents that in 1871 the Guatemalan Government implemented land reforms that ended traditional land ownership, and placed it in the hands of private individuals with the majority of Maya communities retaining less than half their traditional territory.[25] History has shown that these 19th Century land reforms have continued to adversely affect Maya peoples well into the 20th Century. In the 1950s the then government led by reformist president Juan José Arévalo planned to institute an agrarian law reform to overturn the 1871 reforms, which aimed at breaking up the large agricultural estates (*fincas*) and fostering higher productivity on small individually-owned farms, a move which would have benefited Guatemala's Maya population. However, in 1954, after the expropriation of land from the U.S.-backed United Fruit Company, a US-backed coup overthrew the democratically-elected Guatemalan presidency. U.S. interest in this situation was two-fold; firstly in supporting the United Fruit Company, and secondly as a means to fight the rise of Communism in Guatemala, which had supported the land reforms.[26] In the 20 years after the overthrow of the Arévalo government, the urban elite continued to develop Guatemalan industry, resulting in further economic imbalance and repression of the poorer agrarian classes. The tipping point came in 1976 when a severe earthquake in 1976 centred in the Motagua Fault about 160 kilometres northeast of Guatemala City killed approximately 22,000 people and left about a million people homeless. In the extreme circumstances that followed, a 28-year civil war (1978 – 1996) began. Amnesty International estimates that between 50,000 and 60,000 people were killed in Guatemala during the political violence of the 1970s and 80s.[27]

A History of Maya House Architectures

The following chronological history of Maya house architectures is broken into three main periods, with the first being the pre-Columbian, the second Contact/Colonial, and the third post-Independence, and calls on archaeological and ethno-historical accounts in an attempt to provide the most concrete descriptions of Maya house architectures and associated domiciliary patterns. This section parallels the previous presentation of Maya social history and suggests that the history of the Maya house closely reflected the historical, social and cultural development of the peoples themselves. The framing of the discussion around socio-spatial behaviours, semantic associations of built forms and the fixed and semi-fixed elements of the physical structures facilitates a greater understanding of the consistencies and transformations of house architectures through time.

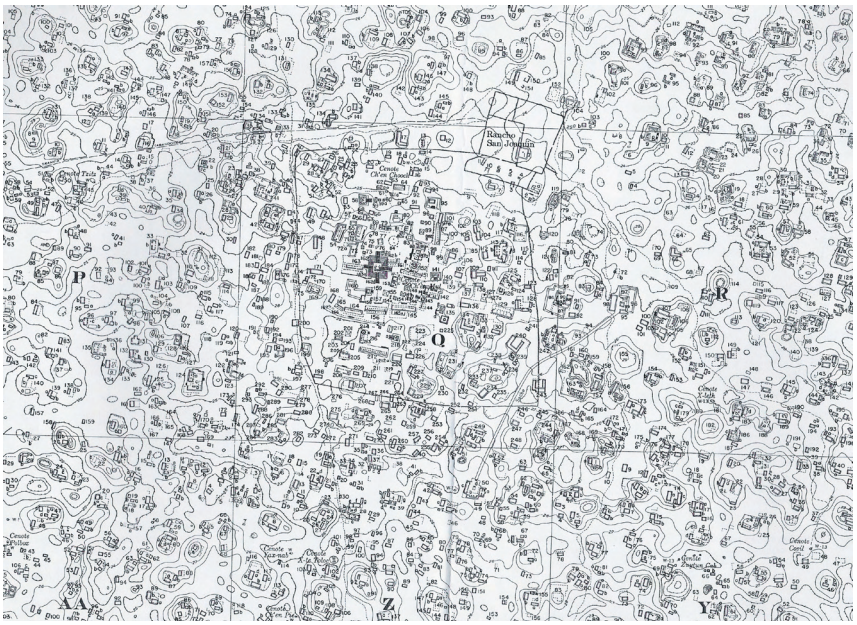

FIGURE 4.1: The Lowlands Classic Maya city of Mayapan, Yucatan, Mexico; note the dispersed 'organic' settlement pattern configured around a central administrative and religious core. Source: Pollock, p.36 (1962).

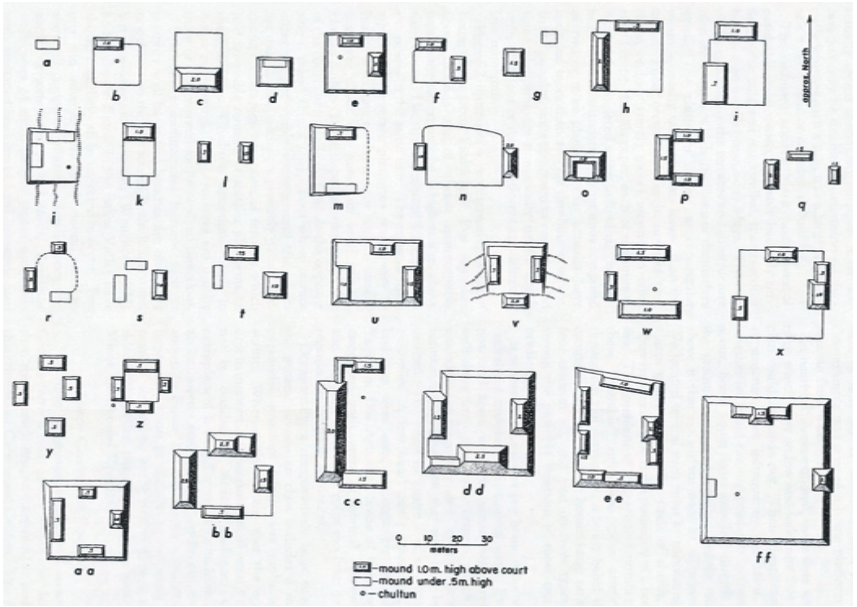

FIGURE 4.2: The courtyard is the predominant domiciliary pattern in the Maya region, continuing to the present day. The plan diagrams above are from the Classic Maya cities of Yaxha and Dos Aguadas and show the courtyard derivations uncovered through archaeological excavation. Source: Bullard, p.358 (1960).

Pre-Columbian House Architectures and Settlement Patterns

At the time of writing, the earliest recorded Maya settlement was the Preclassic coastal community of Cuello on the eastern edge of the southern Lowlands.[28] Dated to 1100 B.C., Structure 329 at Cuello consists of a 12 x 8m apsidal (curved ends) plan form, being constructed of a timber frame superstructure over an earth and stone retaining substructure.[29] The walls were wattle-and-daub (timber and earth) overlaid with a fine painted plaster while the timber roof structure was thatched with a palm grown locally. Consisting of small groups of houses arranged around a central plaza, the Cuello community relied on a combination of cultivation and foraging activities for subsistence.[30] Through an analysis of everyday items found in the excavated remains, Hammond and Cartwright Gerhardt explain that the construction of multiple houses arranged around an internal courtyard/patio reflected the social organisation (kinship patterns) as well as the specific functional requirements of the household. Hence, the entrance patio served as an activity area where agricultural produce was refined for family consumption. There are also more recent studies of Maya settlements documented by Jaime Awe and David Cheetham in Belize.[31]

One of the best preserved examples of the ancient Maya house and its domiciliary patterns comes from the Classic-era Maya community of Cerén in the Zapotitlan Valley of present-day El Salvador. In 600 A.D., the volcano Laguna Caldera erupted, burying the community of Cerén in six metres of ash, preserving house structures and ancillary buildings, domestic paraphernalia and other activity areas such as patios, household gardens and fields. The Cerén remains have meant that archaeologists have been able to determine house construction, social organisation, culinary preferences, agricultural and animal husbandry methods as well as varieties of cultivated plants. Reflecting the Cuello situation, Cerén "households consisted of special-purpose structures: living/sleeping buildings, kitchens, and storerooms… special facilities that probably served multiple households, perhaps the entire community, include a steam bath, what may have been a shaman's house, and a building large enough to accommodate dozens of villagers for community events."[32] In *The Cerén Site*, Sheets illustrates that this domestic pattern of multiple buildings for specific household functions was uniquely Maya when compared with the domiciliary patterns of other Mesoamerican Indigenous peoples.[33]

> In Lower Central America a household is encompassed by a single structure. In central Mexico, Oaxacan families constructed large rectangular buildings for multiple household activities, and internally subdivided them for particular activities. The same is true for Teotihuacan and later societies in the Basin of Mexico. Stone (1948) describes the Lenca earlier this century, in Honduras and El Salvador, living in single structures per family; most have only one room. The Chorti Maya of southeastern Guatemala (Wisdom 1940) presently construct a number of functionally specific buildings per household. The Classic Maya of Copan, the antecedents of the Chorti, constructed multiple structures per household (Webster and Gonlin 1988). The Kekchi Maya of Guatemala space families at least 30 meters from each other, and each family generally lives in a multiple-structure complex internally facing a patio (Wilk 1988).[34]

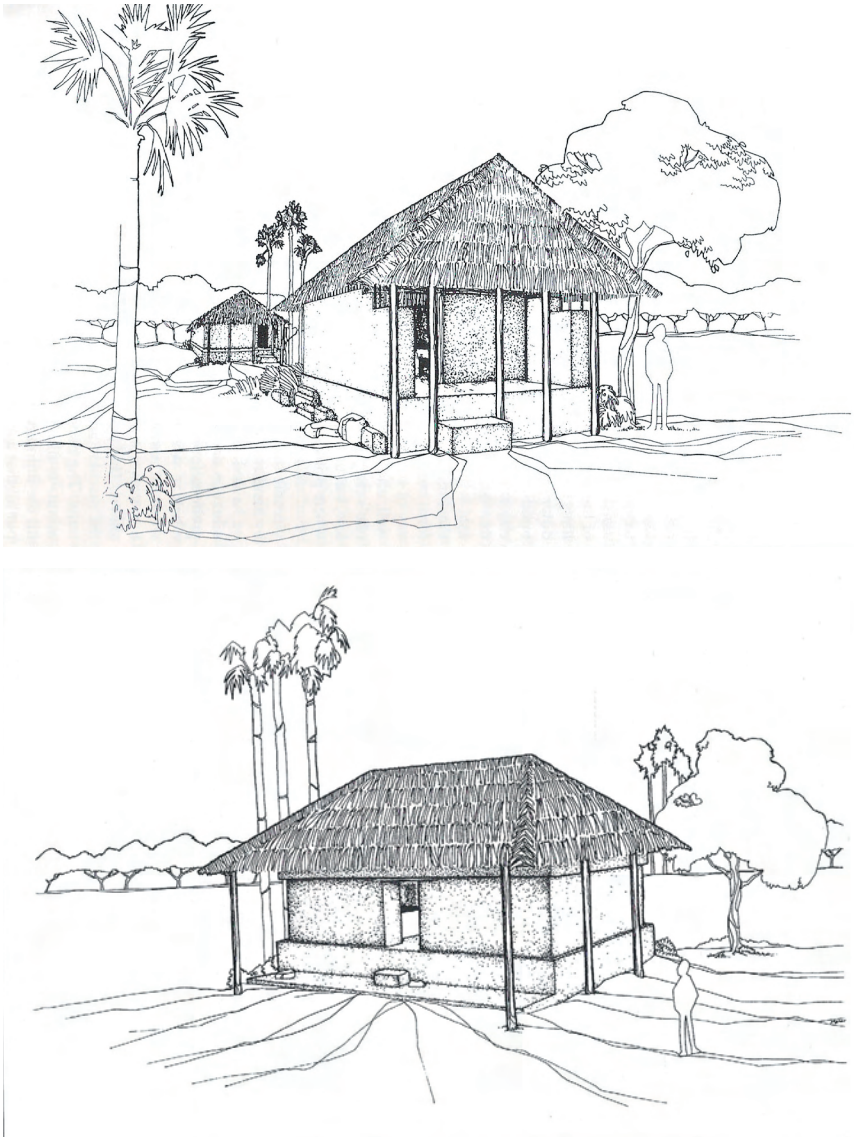

FIGURE 4.3: Reconstructions of Households 1 (top) and 2 from the Ceren site in La Joya, El Salvador. Ceren is one of the earliest known Maya settlements. Note the rectangular and square plan forms, solid adobe walls, and the roof being supported by detached timber structural posts. Source: Sheets, p.63 & p. 90 (1992).

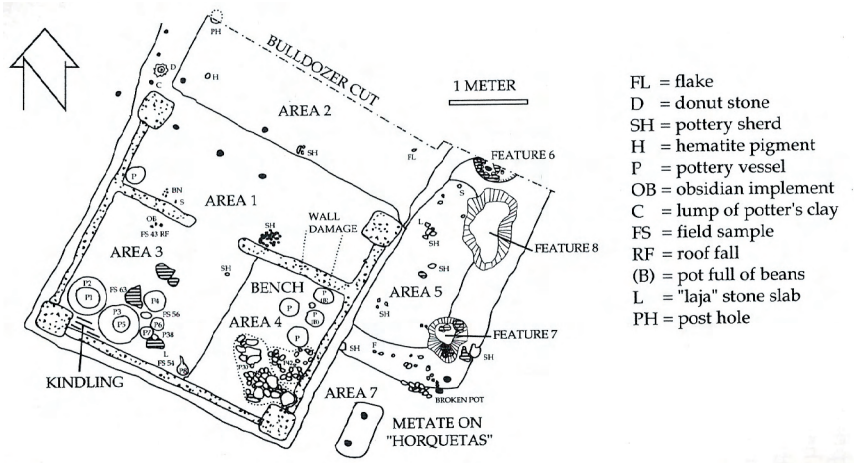

FIGURE 4.4: The plan form of Household 1 at Ceren showing the location of the four main house posts (corners), the front verandah and patio space. Source: Sheets, p.43 (1992).

Household 1 at the Cerén site (see Figures 4.3 and 4.4) had four separate structures for specific activities, as well as an adjacent outdoor activity area, garden and maize field. Sheets suggests that other than cultural tradition, the evolution of these smaller (5 x 5m) separate houses may have been more practical than customary. By combining all the 'intramural' spaces of a household under a single roof, the size of the roof would have been extremely large making it "more vulnerable to wind damage than a set of smaller, lower roofs."[35] Sheets describes the physical form of the house as consisting of four solid adobe columns positioned at either the corners or ends of walls with a series of small interconnected vertical and horizontal timber battens placed at particular intervals to establish a wall frame.[36] This wall frame was then packed with clay and grass to a height of 1.5m and plastered over with a fine limestone. Sheets points to the earthquake resistance of such a form in justifying its longevity and survival to date, and goes on to describe the palm thatch roofing technique and the three-stone hearth located in the centre of the domestic space[37]:

> Wattle-and-daub construction seems to have been pan-Mesoamerican, but there was considerable variety in post pattern. Houses also varied as to whether they were whitewashed or simply mud-plastered. Most houses in the Mexican highlands had square corners, while several lowland areas – from Pánuco to the Guatemalan Pacific Coast – had houses with round corners. In both cases, the door seems to have been on one of the long sides.[38]

An analysis of the work of Sheets, Hammond and Cartwright Gerhardt[39], shows that the Classic Maya house at Cerén was similar in form and function to that of Cuello 500 years earlier, having a courtyard configuration with separate multiple buildings, exhibiting the same form, and arranged around an outdoor patio. The household compound served as an agricultural activity area where crops were grown and harvested with all construction materials for the house and field found locally. Additionally, Sheets' analysis highlights the fact that the Maya domestic arrangement of the Classic period differed from those situations observed in other Mesoamerican groups at the time.[40] The courtyard/patio arrangement was specifically Maya in configuration with the house form itself being rectangular and consisting of four columns located on the sides or corners of walls with a central three-stone internal hearth.

Pre-Columbian Settlement Patterns

An understanding of the evolution of human settlement and the various traits that form the historical record give a greater indication of the fluid link between house, kinship and settlement. As Rapoport says in *House Form and Culture*, "the house cannot be seen in isolation from the settlement, but must be viewed as part of a total social and spatial system which relates the house, way of life, settlement, and even landscape."[41] The *Oxford English Dictionary* defines settlement as "the placing of persons or things in a fixed or permanent position; the act of settling oneself, or state of being settled, in

a permanent abode, etc.; and an assemblage of persons settled in a locality."[42] Settlement studies arose from earlier ethnological studies in human locality, territoriality and kinship groupings. As Vogt states in "An Appraisal Of Prehispanic Settlement Patterns in the New World", the intention of settlement studies was to discover "in what patterned manner the members of a species are spread over a given territory and the common theoretical concern of interpreting what implications these facts about the size, composition, and arrangement of local groupings have for the social behaviour of the species under consideration."[43] Flannery characterises a settlement pattern as "the pattern of sites on the regional landscape...empirically derived by sampling or total survey, and is usually studied by counting sites, measuring their sizes and the distances between them, and so on.[44]

Undoubtedly, there is much dispute among archaeologists concerning a 'true' reading of Classic Maya political organisation.[45] Seemingly, a disciplinary division exists between those who use interpretive techniques of archaeological evidence, and those who rely on ethno-historical and ethnoarchaeological evidence gathered from contact-era and contemporary Maya sources respectively. Debate centres on whether the ancient Maya employed a decentralised kinship-based theocracy with regionally dispersed settlements versus a bureaucratic centralised and class-organised state settlement.[46] Demarest states that when viewed from a socio-evolutionary perspective, either settlement form has the potential to represent a 'true' pattern, with either coexisting at the same time in different regions or existing in the same region but in different eras.[47] Drennan in "Household Location and Compact Versus Dispersed Settlement in Prehispanic Mesoamerica," describes Maya urbanism as an 'ecologically adaptive landscape form',[48] while Gonzalez Claveran in "Maya" in the *Encyclopaedia of Vernacular Architectures of the World* states that pre-Columbian Maya settlement systems had two basic patterns; the complex rural-urban and the dual sedentary-nomadic patterns.[49] The rural-urban pattern consisted of a major religious and administrative head town surrounded by peripheral domestic rural communities, while the nomadic-sedentary settlement system comprised a static city centre with surrounding satellite communities.[50]

Fox, Cook and Demarest in "Constructing Maya Communities" illustrate the kinship and lineage connection between individual families at the household level and clan groups at the community and regional scale.[51] Supported by archaeological evidence, their work shows Maya settlement patterns to be hierarchically structured in gradations of size from large administrative/religious centres to smaller regional outposts of five or six households. Ashmore in "Site-Planning Principles and Concepts of Directionality among the Ancient Maya" demonstrates the ancient Maya use of the cardinal directions as symbolic positions in architectural and settlement configuration, and exemplifies how ancient Maya settlement principles were both cosmological and social/political manifestations.[52] The settlement was an activity setting whereby the everyday lived experiences of the Maya reflected religious belief on many levels. As with most archaeological interpretation, Ashmore's views of

directionality and planning are seen as somewhat controversial by some Mayanist scholars. In "Can We Read Cosmology in Ancient Maya City Plans? Comment on Ashmore and Sabloff", Michael Smith criticises Ashmore's study of cosmology in ancient Maya city plans as lacking empirical rigour and 'highly subjective methods' in relying too heavily on the work of others.[53] Smith does not rule out the role of cosmology in Maya city planning but does call for "firmer grounding in empirical data" to stave off speculative assertions.[54]

According to archaeological evidence on Pre-Columbian history, the following conclusions are drawn regarding house form and settlement patterns. The courtyard configuration was distinctly Maya, as compared to other Mesoamerican peoples. Individual families inhabited courtyard compounds and lived in close proximity to extended family and kinship groups. These extended family associations conglomerated into neighbourhood groups to form communities dispersed over a regional landscape that were then connected through religious affiliation, lineage and allegiance to larger administrative centres, while settlement planning and building orientation alluded to Maya cosmology and worldview.

Colonial Era Maya House Architectures and Settlement Patterns (1524-1810 A.D.)

The following description provides evidence of Maya house architectures from the Conquest and subsequent Colonial eras, and presents in chronological order, beginning with the first descriptions recorded by the Spanish at the time of Conquest, and moving through the post-Conquest Colonial period to the formation of the contemporary nation-states of Mexico, Guatemala, Belize, Honduras and El Salvador. This was a highly traumatic period for the Maya as they were not only living with foreign invasion and subjugation, but also alien illnesses and disease. As Carlsen states in *The War for the Heart and Soul of a Highland Maya Town*:

> The conquest of Mesoamerica was a highly varied process, with some areas being affected far more than others. At the time, highland Guatemala was dominated by culturally sophisticated and functioning societies, and was not otherwise disposed to momentous sociocultural change. The change unleashed by contact, far from being an internally generated process, stemmed from an event imposed from without. In assessing the transformations which occurred it is important to realize that change of social systems must proceed from one of three factors: total force; the failure of an existing system; or, at least in theory a system's exposure to obviously superior novelty. In the Guatemalan hinterlands the Conquest entailed none of these.[55]

There were very few accounts detailing the dwelling forms of Maya peoples during the conquest period of the early 16th Century. In *Cartas de Relación*, Hernán Cortés reports, circa 1524, that he saw "large houses with thatched roofs" in Guatemala.[56] Bancroft in the late 1800s states that: "The early voyagers on the coast of Yucatán, such as Grijalva and Córdoba, saw well-built houses of stone and lime, with sloping roofs thatched with straw or reeds; or, in some instances, with slates of stone;

but this is all they tell us, and, indeed, they had little opportunity for close examination."[57] To date, the most detailed account of post-Conquest Maya house architectures is Diego de Landa's *Relación de Las Cosas de Yucatán*.[58] Written in 1566, de Landa meticulously recorded the last vestiges of pre-Columbian Yukatek Maya life and belief. It must be noted that de Landa's descriptions are limited to his experiences in the Yucatan Peninsula and were not suggestive of all pre-Columbian Maya house forms and patterns. The detailed descriptions below were gathered from *Relación* and discuss aspects of Yukatek house and settlement patterns including construction materials, communal patterns of house construction, exterior and interior dwelling layouts, ritual ceremonies associated with blessing the house, and the death of a person in the house, relevant in setting the scene at the time of Conquest:

> Before the Spaniards subdued the country the Indians lived together in well ordered communities; they kept the ground in excellent condition, free from noxious vegetation and planted with fine trees. The habitation was as follows: in the centre of the town were the temples, with beautiful plazas, and around the temples stood the houses of the chiefs and the priests, and next those of the leading men. Closest to these came the houses of those who were wealthiest and most esteemed, and at the borders of the town were the houses of the common people. The wells, where they were few, were near the houses of the chiefs; their plantations were set out in the trees for making wine, and sown with cotton, pepper and maize. They lived in these communities for fear of their enemies, lest they be taken in captivity; but after the wars with the Spaniards they dispersed through the forests.[59]

> In building their houses their method was to cover them with an excellent thatch they have in abundance, or with the leaves of a palm well adapted to that purpose, the roof being very steep to prevent its raining through. They then run a wall lengthways of the whole house, leaving certain doorways into the half which they call the back of the house, where they have their beds. The other half they whiten with a very fine whitewash, and the chiefs also have beautiful frescoes there. This part serves for the reception and lodging of guests, and has no doorway but is open along the whole length of the house. The roof drops very low in front as a protection against sun and rain; also, they say, the better to defend the interior from enemies in case of necessity.[60]

> The common people build the chief's dwellings at their own expense. The houses having no doors; it is held a grave offence to do any wrong to another's house; in the back, however, they have a small door for household uses. They sleep on beds made of small rods, covered with mats, and with their mantles of cotton as covering. In the summer they sleep in the front part of the house on the mats, especially the men. Away from the house, the entire village sows the fields of the chief, cares for them, and harvests what is required for him and his household; and whenever they hunt and fish, or at the salt gathering time, they always give a part to the chief; in these matters everything is always common.[61]

> Baptism is not found anywhere in the Indies save here in Yucatan, and even with a word meaning to be anew or a second time, the same as the Latin renascer…When this was done [the baptism] the priest proceeded to the purification of the house, expelling the demon. To do this they placed four benches in the

> four corners of the patio, on which the four chacs seated themselves, with a long cord tied from one to the other, in such fashion as that the children were corralled in the middle, after which those parents who had fasted stepped over the cord, into the circuit.[62]

> At death they shrouded the body, filled the mouth with ground maize and a drink called *koyem*, and with this certain stones they used for money, that food might not be lacking to him in the other life. They buried them in their houses or the vicinity, throwing some of their idols into the grave…They commonly abandoned the house after the funeral, except where many people were living there, in whose company they would lose some of their fear of death.[63]

In describing the Yukatek house, de Landa states that it had a steep thatch roof, which had excellent waterproofing properties, no doors, and a wall that ran the house length and divided the front public patio from the private sleeping areas in the rear. He elucidates that the walls of this public space were plastered and decorated with 'beautiful frescoes', and mentions the purification ritual involved in a new house ceremony. De Landa also presents the process of abandoning the house at the death of its owner/s, with the dead being interred under the floor of the house. Of interest, is de Landa's statement regarding the dispersal of the Yukatek Maya into remote jungle communities to escape Spanish control, which may have been in response to attempts at *reduccion* and *congregacion* processes whereby Maya people were gathered into central administrative communities. Following de Landa, Herrera, in 1601, notes that "the temples, palaces, and houses of the nobility were in the centre, with the dwellings of the common people grouped about them and...the streets were well kept."[64] In 1648, Thomas Gage, an Irish Dominican priest wrote *New Survey of the West Indies,* detailing his experiences among the Pokomam Maya peoples of Guatemala, and describes their houses as follows:

> ...but poor thatched Cottages, without any upper rooms, but commonly one or two only rooms below, in the one they dress their meat in the middle of it, making a compass for fire, with two or three stones, without any other chimney to convey the smoke away, which spreading itself about the room, fills the thatch and the rafters so with soot, that all the room seems to be a chimney. The next unto it, is not free from smoke and blackness where sometimes are four or five beds according to the family. The poorer sort have but one room, where they eat, dress their meat and sleep. They have four or five beds according to the family...Few there are that set any locks upon their doors, for they fear no robbing nor stealing, neither have they in their houses much to lose, earthen pots, and pans, and dishes, and cups to drink their chocolate, being the chief commodities in their house. There is scarce any house which hath not also in the yard a stew, wherein they bath themselves with hot water.[65]

In 1875, Hubert Bancroft published one of the best known compilations of written descriptions of Maya house architectures.[66] Titled, *The native races of the Pacific states of North America*, Bancroft compiled historical descriptions written during the conquest and colonial eras to best outline Maya beliefs and customs. He summarises one of the first detailed accounts of Lakandon Maya house

architectures written in 1701 by Spanish historian Juan de Villagutierre Soto-Mayor who gave an account of a Lakandon village of 103 thatched, timber framed houses with open fronts and divided interiors, plastered in a similar manner to Yukatek houses.[67] Bancroft also presentes Juarros' 1808 account of the Kichee' capital of Utatlan in central Guatemala, stating that the ruling classes concentrated their public buildings, palaces and temples in a central location with narrow streets, while the common people built their houses on the periphery in a defensive settlement pattern, containing many 'sumptuous edifices'.[68] Juarros' went on to describe the gridded Kaqchikel capital Patinamit, which was a very different settlement form, being divided north to south by a ditch lined by masonry walls that separated the ruling (eastern section) and common (western section) classes.[69]

Colonial History: Spanish attempts at congregación and reducción

As discussed previously, the Maya had a long history of resisting external attempts of domination and control. During the colonial period, the Spanish made several attempts to control the population through organizational processes called *congregación* (congregation) and *reducción* (reduction) (see Figure 4.5).[70] Spanish authorities would move large populations of people from rural 'dispersed' communities into 'nucleated' urban areas, which enabled greater control of the Indigenous populations. As Nations in "The Lacandones, Gertrude Blom, and the Selva Lacandona" states:

> …during the Classic Maya era (250 – 900 A.D.) hundreds of thousands of Chol-speaking Maya lived in the Selva Lacandona…from 1559 to 1712, the Spaniards killed captured, relocated the majority of the inhabitants of the region...From the Ocosingo Valley the Spaniards removed and relocated hundreds of Tzeltal-speaking families. And from the northern and southern jungle, they removed the Chol-speaking Maya. Relocated by colonial officials into the towns of Palenque, Ocosingo, Tila, Yajalón, Tumbalá and Salto de Agua, those Indian families labored on sugarcane plantations and cattle *haciendas*. After clearing the Selva Lacandona of the majority of Chol-speaking Maya groups "…other Maya groups – refugees from occupied territories to the north and west – moved in…As this mixed group of refugees – Quejach Maya, Itzá Maya and other Yucatec-speaking Maya – occupied the region during the seventeenth and eighteenth centuries…they too were relocated by later Spanish expeditions.[71]

Congregación also facilitated an ideological domination through evangelizing a religion-based philosophy, as well as coercion. Colonial-era accounts discussed the Maya's dislike for *reducción* and tell of Spanish difficulties in preventing them from moving back to their traditional communities.[72] *Reducción* was somewhat more successful in the Aztec region, perhaps as they were accustomed to living in urban 'nucleated' communities.[73]

Contemporary Maya House Form & Settlement (post-1810 A.D.)

In 1835, Juan Galindo, a Costa Rican army officer, reignited foreign interest in the Maya realm with his written description of the ruins of the Classic-period city of Copan, in present day Honduras.[74] Galindo's account of Copan inspired John Lloyd Stephens, an American diplomat, and his English

colleague, the architect and artist Frederick Catherwood, to organise an expedition to Copan to conduct a detailed examination of the ruins. Stephens and Catherwood arrived in 1839 and spent the next two years exploring the Maya region. Published in 1841, the first of their two books titled, *Incidents of Travel in Central America, Chiapas and Yucatan* presents the work carried out on their first fieldtrip, while the second *Incidents of Travel in Yucatan* published in 1848 documents in greater detail the Maya ruins of Chichen Itza', Uxmal and Labna. The work of Stephens and Catherwood led to a renewed interest in the apparent 'lost' civilisation of the Maya. Of relevance to this thesis is their description, in 1843, of a Yukatek community, and associated house form:

> We passed through a long street having on each side thatched huts, occupied exclusively by the Indians. Some had a picturesque appearance, and the engraving which follows represents one of them. At the end of the street, as well as at the ends of the three other principal streets, which run toward the cardinal points, were a small chapel and altar, at which the inhabitants of the village might offer up prayers on leaving it, and thanks for their safe return.[75]

Stephens and Catherwood describe the interior of a Yukatek house as follows:

> The hut of which we thus became the sudden and involuntary masters was furnished with three stones for a fireplace, a wooden horse for kneading maize upon, a comal for baking tortillas, and earthen olla, or pot, for cooking, three or four waccals, or gourds, for drinking-cups, and two small Indian hammocks, which also were demanded and given up. Besides these there was a circular dining-table about a foot and a half in diameter, supported by three pegs about eight inches high, and some blocks of wood about the same height for seats.[76]

In 1880, Englishman Alfred Maudsley began work on the excavation and documentation of the ruins Stephens and Catherwood had described some 40 years earlier. Maudsley's investigations covered the ruins of Quiriguá, Copán, Tikal, Yaxchilán, Palenque, and Chichén Itzá. Ten years later, the German archaeologist/explorer Teobert Maler explored the Yucatán Peninsula in southern Mexico, and is credited for uncovering the ruins of Ceibal and Piedras Negras, as well as photographing the ruins of Yaxhá, Naranjo and Tikal in Guatemala. Eventually, Harvard University's Peabody Museum engaged Maler to search for ruins in Chiapas, Mexico. It was the first time in the history of Maya studies that institutional support was given for the exploration of Maya ruins, and heralded a new era in the advancement of Maya studies; a tradition of institutional support that continues to the present day.

In the early 1900s, the Carnegie Institution of Washington through its founder Andrew Carnegie provided a large sum of money to Sylvanus G. Morley for the excavation of the ruins discovered by Maudsley and Maler, as well as the exploration of new ruins. The Carnegie Institution's involvement coincided with the rise of the United States of America as a political force in the Latin American

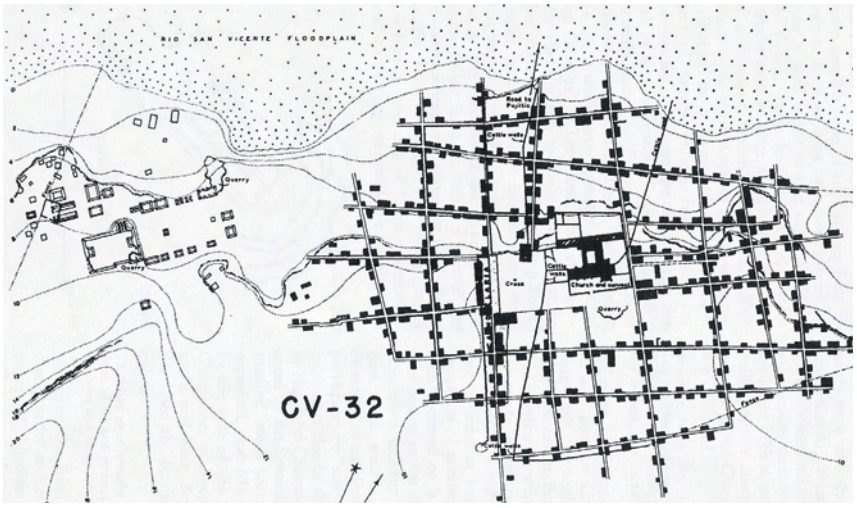

FIGURE 4.5: Plan of Copanaguastla, Honduras; note the different settlement patterning between the Late Postclassic political centre to the left of the subsequent Early Colonial town illustrating the principles of Spanish congregacion and reduccion. Source: Adams, p.356 (1961).

FIGURE 4.6 Frederick Catherwood's sketch of a Yukatek Maya village in 1843. Source: Stephens, p.125 (1843).

region, lasting until 1936 when the threat of World War II diverted funds away from non-essential archaeological field activities.[77] At its peak, the Carnegie Institution provided funding for some of the most important works in the field of Maya studies, works that are still bearing fruit over 100 years later. With increased interest and financial support, the discipline of archaeology evolved out of this 'adventurer/explorer' realm prone to exaggerated historical scenarios to one based on solid scientific method, coinciding with a move away from profit-seeking private institutions to non-profit organizations such as universities and museums. The weight of financial support enabled the field of Maya studies to grow significantly. A research tradition, which began with the ethno-historical accounts of Spanish colonisers, was to become an invaluable resource not only for Euroamerican academia but also for future generations of Maya peoples.

In 1918, Gann in *The Maya Indians of Southern Yucatan and Northern British Honduras* states that Yukatek villages "vary in size from two or three houses to two hundred or more, with inhabitants numbering from 10 or 12 to more than 1000."[78] He compares the irregularity of Yukatek settlement patterns in smaller communities to the more regular arrangement of larger communities around a "large central space, or plaza, where the dance house and church are usually situated" and illustrates that the majority of Yukatek houses were located within a heavily planted yard.[79] In reading Gann's description of the communal process of house construction, it is possible to determine that Yukatek house architecture in 1918 consisted of timber-framed walls overlaid with a chopped fibre (*pakluum*) covered with a fine plaster, and with the roof layered with *guano* palm leaves up to 18 inches (450 millimetres) thick. The compacted earthen-floor of the house created a 'flat hard surface' while doors and windows comprised a similar material to the roof.[80] The majority of materials used to construct the dwelling were located in close proximity to the village, while Yukatek families commonly slept, lived and ate in a single room, divided into two apartments by a flimsy cotton curtain.[81] Gann describes the kitchen building as a separate replica house located a few yards behind the main family dwelling, with the family altar (*canche*) being a prominent object in most houses and consisting of a high square table upon which stood a wooden cross.[82]

In 1926, archaeologist Frans Blom, and ethnologist Oliver La Farge, wrote *Tribes and Temples*, a detailed ethnological account of Tzeltal Maya communities in Chiapas, southern Mexico. On Tzeltal house architecture, Blom and La Farge report large numbers of square houses with walls of broad split planks, narrow front porches, doors with leather hinges, and ridge caps made of inverted pottery.[83] The interior furnishings of the house consisted of two wooden beds located in the corners, an altar (table) with a large cross, an indoor fireplace, and a three-stone outdoor fireplace, tortilla griddle over the fireplace, a drying basket at the eaves level so as to dry as well as protect food from insects, a second table for grinding corn, a hammock, two mats, and a three legged stool.[84] Tzeltal house architecture also made use of lashing for connecting timber members, as well as for repairing thatch

roofing material.[85] Some fifty years later in 1976, Alfonso Villas-Rojas provides a similar description of Tzeltal house architecture:

> Tzeltal housing is predominantly square in shape with sides of 3 metres to 5 metres in length. Walls are of wattle and daub construction or simply tree trunks tied with vines. The floors are of hardened earth and usually the only opening within the hut is the door, except in low lying areas where small windows are used for ventilation. The hut is generally divided into two rooms. The front of the dwelling is the parlour and kitchen, the rear is used for sleeping. This however varies in other communities. Furniture within the house consists of three hearth stones, the comal (*samet*), the grinding stone (*chá*), a bench to hold the metate (ah-ken), a couple of smaller tables (*matz-malté* or *vebalté*) and other small benches made of scooped-out tree trunks (*tzanté*). The most important object within the house is the altar on which the family cross sits. The design of the alter changes in different regions, and is generally ornamented with pine needles and the figure of a saint that is placed beside the cross.[86]

In *Tribes and Temples,* Blom and La Farge provide a limited account of Yokot'an (Chontal) Maya house architecture in the community of Comalcalco in the state of Tabasco, southern Mexico.[87] Despite the minimal description of the house, Blom and La Farge confirm that it was similar to the Yukatek Maya house in construction materials, having no windows, and including an internal three-stone fireplace with an attached store house.[88] In 1931, La Farge continued his work in the Maya realm with Douglas Byers producing *The Year Bearer's People,* the first contemporary ethnographic study in the Cuchumatanes region of Guatemala, which describes Popti' (Jacalteca) Maya house architecture as consisting of a thatch roof with mud walls, a narrow front porch, doors of woven cane or vertical poles, with small windows in the end walls but none in the front or rear walls.[89] Door thresholds were raised about 30cm above the ground requiring one to step over the threshold on entering the house.[90] Two layers of thatch finished the roof with the first a fine grade grass laid underneath a second outer layer of much thicker, coarser grass or straw; potsherds were used to protect the ridge line.[91] Byers and La Farge witnessed beehives hung from the porch eaves, and semi-excavated sweat baths of 1 metre by 1.5 metre in size, with walls made of mud and stone.[92] Popti' Maya houses were constructed with communal labour, while the construction required a number of new house ceremonies.[93] The interior of the Popti' dwelling consisted of a table for grinding corn, a three-stone fireplace in one corner, large cooking pots and water jars, with mats instead of beds, various assortments of colanders, baskets, and bowls, as well as drying nets containing meat and other animal products hung over the fire.[94]

As previously stated, the Carnegie Institution's involvement in the region during the 1930s and 40s led to one of the richest eras for the description of particular Maya house architectures. As a result, the Yukatek Maya of southern Mexico are one of the most studied Maya groups to this day. The following description of Yukatek house architectures brings together the most relevant accounts of the pre-World War 2 era with three of the most influential publications of that time: Harry Pollock's

Round Structures of Aboriginal Middle America published in 1936, Robert Wauchope's *Modern Maya Houses* from 1938, and Morris Steggerda's *Maya Indians of Yucatan* published in 1941. Pollock describes Yukatek house architectures as commonly rectangular with occasional rounded and elliptical ends, and stated that it was these rounded and elliptical ends differentiated Yukatek houses from others in the Maya realm. Pollock demonstrates that the wall was not an integral component in the structure of the house, thus allowing it to float free of the main structural posts and be configured in a rounded and elliptical manner.[95] "This development might have come through the effort to obtain more interior space, and effort that is indicated by the placing of the wall outside of the main support posts."[96]

> We cannot be certain of the origins of architecture in Middle America. At the time of Conquest the common dwelling was a simple structure of wood, thatch, wattle and daub, or adobe, depending upon the local environment. During the past four centuries this type of dwelling has changed very slightly, if at all, and we may say with some certainty that the modern Indian house type is often pre-Hispanic in conception and design.[97]

With the publication of *Modern Maya Houses*, Robert Wauchope provides the most comprehensive account of Maya house architectures to date in academic history. As such, his work has formed the foundation for the research undertaken in this thesis, and supplemented the descriptions and analysis carried out in the subsequent chapters of the present work. In a similar manner to the current investigation, Wauchope's research centres on a regional approach to Maya house architectures, as he documented twelve houses among six Maya languages – Yukatek, Pokomchi', Ch'orti', Tzutujil, Kaqchikel, and Kekchi'.

Steggerda's publication of *Maya Indians of Yucatan* concentrates on a field study conducted in the Yukatek Maya town of Piste in 1930.[98] His analysis concludes that the "types of houses in 1930 seem to have not changed much in 1900 years."[99] Steggerda describes Yukatek house architecture in Piste as rectangular with rounded ends, with an average dwelling size of 7.5 metres in length and 3 to 3.5 metres in width. Walls were 1.8 metres in height and were constructed of vertical timber poles with daub (mud) packed in between to form a solid, impenetrable finish. There were four main timber columns supporting the timber, palm thatched, roof, and two doors facing each other in opposite walls on the long facades of the house and the earth floors were "sprinkled with water daily to settle the dust and tamped hard by the constant tread of bare feet."[100] Steggerda mentions the three-stone hearth, which he says was located at the end of the house away from the prevailing easterly wind.[101] Similar to Gann in 1918, Steggerda identified the kitchen building, which sat behind the main dwelling.[102] He states that the average occupancy of the house was 18.5 years with termites and fires being the major cause for deterioration.[103]

Others have contributed to this periods understanding of Maya architecture For example in 1947, Felix McBryde, presented the findings of research conducted in 1936 in the Tz'utujil community of Santiago Atitlan, Guatemala. In *Cultural and historical geography of Southwest Guatemala*, McBryde describes Tz'utujil house architectures as "stone-and-cane walled, grass-thatched houses, many of them of the primitive, square type with pyramidal roof…built along a network of narrow zigzag, stone walled alleys that seldom approach a straight line."[104] In 1969, William Douglas, in *Illness and Curing in Santiago Atitlán, a Tzutujil-Maya Community in the Southwestern Highlands of Guatemala* observes that the town still conformed to McBryde's description.[105] Two years after McBryde's publication, Charles Wagley published an article in *American Anthropologist*, titled "The Social and Religious Life of a Guatemalan Village" detailing Mam Maya house architectures from Santiago Chimaltenango in the Highlands region of Guatemala.[106] He begins by illustrating that the majority of Mam people lived in rural settings, with the head town being the administrative centre only:

> House-building illustrates the cohesive co-operation of an extended family of a man and his sons. The preliminary work of building the walls and the frame for the roof is done by the father and his sons. This group works at the task during their spare time for several months. When they have finished everything about the house except the roofing, they call in all their patrilineal kin, all the compadres (godfathers of their children), and even friends to complete the roof in one day. That night there is a fiesta with coffee, sweet rolls, aguardiente, and dancing to marimba music provided by the patriarch. Again during the two annual harvestings of maize, the men, women, and children of the extended families co-operate. They harvest each other's crops, finishing the harvest of each field in one day if possible.[107]

In presenting excerpts from the diary of Juan de Dios Rosales, Wagley illustrates that gabled roofed Mam houses consisted of locally available tile and thatch and adobe bricks made of clay, maize stalks and pine needles. The main columns of the house were cypress pine and supported the timber roof beams and rafters for either the thatch or tile roofs. Wagley invites attention to the common construction knowledge shared among community members. "We saw a youngster making a small wooden cross about five inches (125 millimetres) high, which will be placed on the peak of the new house...the first pieces played by the marimba players were danced by the oldest men among the workers, so the house would last many years."[108] Drawing on original research undertaken in 1966[109] James Warfield wrote in the *Encyclopedia of Vernacular Architecture of the World* regarding Tzotzil Maya house architectures from the community of Zinacantan, in Chiapas, Mexico.[110] According to Warfield, the most common type of Tzotzil house in Zinacantan had a steeply pitched thatch roof and adobe walls of vertical and horizontal timbers in-filled with daub (earth).[111] This lashed timber frame provided lateral support for the house during earthquake events, while roofing thatch was a grass found locally.[112] Zinacanteco people themselves slept on the floor on reed mats or wooden beds built

into the side of the house. Gender divisions defined by hearth location and family altar defined the interior socio-spatial layout of the house.[113] In describing the Tzotzil house in more detail, Warfield continues:

> The living environment of the Zinacanteco family consists of a single-room house (*na*). The term *na* encompasses not only the actual house, but also the entire fenced compound with buildings such as granaries, a sweathouse, animal shelters, fruit trees, chayote vines and plots of flowers, maize or squash. Since flat land is at a premium in the rugged terrain, houses are often built on manmade terraces shaped from the earth. A hearth for cooking and providing warmth is the principal feature of the house interior, while an often decorated house cross, a simple, wooden, religious miniature, serves as ritual house entrance, domestic shrine, and focus of patio activities. Dedication ceremonies serve to incorporate each house into the sacred belief system as it acquires a 'soul'. [114]

Warfield's research eventually led to the publication of two books on Tzotzil house architecture by Evon Vogt. The publications of *Zinacantan: A Maya community in the highlands of Chiapas* in 1969 and *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals* in 1976 extend Warfield's research in presenting other important social elements underscoring Tzotzil house architecture. For example, Vogt notes that the hearth itself was the focal point for women's work, and family interaction; there were specific symbolic/religious associations built into the Tzotzil house form[115]; there were a number of religious ceremonies associated with house construction, such as the compensating the Earth Lord for the materials used in building the house; preparations (the cutting of timber and grasses) for new houses began in autumn under a full moon, with construction starting the next spring.[116] Vogt tells the reader that the new house ceremony was vital in providing the new house with a soul, he also stated that Zinacanteco houses and fields were models of the Tzotzil universe having "precisely determined centres" that emphasised the critical components of Tzotzil cosmology.[117] "Houses and fields are small-scaled models of the quincuncial cosmogony. The universe was created by the Vaxak-Men, gods who support it at its corners and who designated its center, the "navel of the world," in Zinacantan Center."[118] Vogt continues by stating that Zinacanteco houses "provide an image of the vertical divisions in the Zinacanteco universe" where the form and linguistic associations of the roof structure reflected the sacred mountains, and realm of the ancestors in Zinacanteco belief and the earthen floor itself represented the underworld, the realm of the Earth Lord.[119] "In line with the three layers of Vinahel (heaven), the Zinacanteco roof structure has three conceptual layers, marked by three sets of [roof] joists.[120]

> The critical binary opposition between directional east and directional west is symbolically represented in the allocation of space inside a Zinacanteco house: the men's side is toward "rising sun," with the house altar (if there is one) against the eastern wall; the women's side of the house, with the hearth and cooking area, is toward "setting sun." The men's side symbolizes maleness, hotness, aboveness, oldness, and higher rank; the other, femaleness, coldness, belowness, youngness, and lower rank. [121]

Chronologically, Vogt's work was one of the last descriptions of Maya house architectures published in the 20-year period (1976-1996) of the Guatemalan civil war. Due to the unrest of that episode, many Euroamerican academics and associated researchers left the region, only to return in the late 1990s. The publication of Paul Oliver's *Encyclopedia of Vernacular Architecture of the World* in 1997 details a number of Maya houses, with Gonzalez Claveran describing Yukatek houses, Ramirez Vargas the Ch'orti', Robert Laughlin the Tzeltal, and Richard Wilk the house architectures of Kekchi' Maya in Belize. There was also such work done by the Coxoh ethnoarchaeological project by Brian Hayden, Michael Deal and others, under the auspices of Thomas Lee of the New World Archaeological Foundation.[122]

Conclusion

This chapter has shown that the history of Maya house architectures closely paralleled the social and cultural development of the different Maya societies themselves. Linguistic evidence has demonstrated that an original proto-Maya language group existed and that over the last four millennia. This original single community split through multiple migrations to comprise the 28 language groups living in the study region. Archaeological evidence reveals that pre-Columbian settlement systems accorded with either a complex rural-urban pattern or a sedentary-nomadic pattern, although there were variations to this rule. The rural-urban model consists of a major religious and administrative head town surrounded by peripheral domestic rural communities while the nomadic-sedentary settlement system comprised a static city centre with satellite nomadic communities. In accordance with a relatively uniform settlement system, archaeological evidence has also shown a consistency in domiciliary patterns with the courtyard configuration of household settings being distinctly Maya as compared to other Mesoamerican peoples. Individual families inhabited courtyard compounds and lived in close proximity to extended family and kinship groups. These extended family associations conglomerated into neighbourhood groups to form communities, which were dispersed over a regional landscape and connected through religious affiliation, lineage and allegiance to larger administrative centres. Furthermore, archaeological evidence has revealed that settlement planning and building orientation alluded to Maya cosmology and worldview.

Historical accounts provided evidence that during the Colonial period, the Maya maintained the general configuration of traditional house forms and domiciliary layouts in those areas outside direct Spanish influence. Whereas those areas closer to Spanish control and subjugation underwent processes of *congregación* and *reducción*, which prevented their maintenance of traditional lifeways and house architectures through conglomerating people into urbanised settlements.

Interest in the region was re-ignited through the work of John Lloyd Stephens and Frederick

Catherwood in the mid 1800s. Their re-discovery of pre-Columbian Maya ruins led to a new involvement in the region by North American public and private organisations, such as the Carnegie Institution of Washington. One of the major beneficiaries of this support was American archaeologist Robert Wauchope who in the 1930s published *Modern Maya Houses*, a work which until this thesis was the most comprehensive survey of Maya houses ever undertaken. Wauchope's work provides evidence that the predominant house form in Maya communities up to the late 1930s maintained the house traditions described in early Colonial era accounts. For the most part, the majority of 20th Century scholarly work on Maya house traditions investigates the physical attributes of house form. No scholar until the present investigation has attempted a pan-Maya regional analysis of traditional house form. Wauchope made a physical analysis of the house form among eight language groups in order to facilitate his research agenda of interpreting Maya archaeological excavations, yet he did not investigate the semantic associations underlying the built form. Through presenting archaeological and historical literary evidence this chapter has shown that the houses under investigation in this dissertation are the continuation and maintenance of a house tradition, which may well be more than 4,000 years old. As Sharer in *The Ancient Maya* illustrates:

> Throughout the Maya area the remains of most domestic buildings indicate that they were constructed in the same manner as are contemporary Maya houses…These domestic structures, the oldest known form of Maya architecture, provide the basic design prototype for subsequent elaborations rendered in more durable stone and plaster.[123]

In conclusion, this abridge history of Maya house architectures and settlement patterns complements the following chapters, which present the main research findings, analyses and subsequent discussion of contemporary Maya house traditions and *casas de paja*.

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V
Pan-Maya Comparisons: Material Significances

Although there were 28 Maya language groups in the study region at the time of writing this dissertation, the most striking observation made during fieldwork was how many readily observable physical, behavioural and metaphysical properties around the various house forms were common to these distinct groups. The aim of this chapter is to comparatively analyse the physical forms and associated behaviours of the 27 houses surveyed in order to understand both the commonalities and diversities contained within the pan-Maya architectural tradition (see Figures 5.1, 5.2 and 5.3). The chapter analysis incorporates Table 3 (Appendix F), which summarises the overall results of the regional survey in compiling information on material usage, geographical distribution of house types, familial/historical linguistic linkages and recent demographic information. In addition, Table 4 (Appendix F) details the results of archival and historical literature searches, and compares Robert Wauchope's original survey conducted in the 1930s with the information gathered.

The Relationship of Maya House Architectures to Language Groups

One of the first and most interesting observations of the regional analysis was the maintenance of language-specific architectural forms; meaning house form generally corresponded to language whereby no two language groups shared identical. Yukatek (apsidal *pakluum*) and Itza' houses were the exception to this rule, being identical in architectural form and material construction (see Figure 5.1). The reason for this specific case is discussed later in this chapter, and relates to shared linguistic and cultural histories. In 1938, Wauchope's limited house survey pointed to language specificity however due to the unfinished nature of his work, it is impossible to know how widespread this language specificity occurred throughout the region. In 2006, when presented with this research at the 10th Conference of the International Association for the Study of Traditional Environments (IASTE), Marcel Vellinga, co-author of the *Atlas of Vernacular Architecture of the World* stated that to the best of his knowledge, the Maya appeared to be one of the only indigenous groups in the world where house style correlated with language in such a direct and distinct manner.[1]

Of the 33 Maya language groups believed to be in existence at the time of Spanish invasion, only 28 currently remain. During fieldwork, the researcher located representative houses for 19 of the 28 remaining groups and documented a total of 27 examples; 21 of these houses were architecturally documented while the remaining six houses were photographed only (Appendices A – E). Two groups exhibited more than one variation in house form, with the Yukatek having five distinct houses, the Mam three and the Kekchi' two. Of those nine groups where the author was unable to locate traditional houses, three (Lakandon, Tektitek, and Uspantek) have current populations of 3,000 speakers or less, while five others (Chuj, Tojolob'al, Sakapultek, Awakatek, and Tacanec) have populations of 50,000 speakers or less. In saying this, the current author was able to locate Mopan, Itza' and Sipakapense houses, which have current populations of less than 3,000 speakers. Of these groups, only three

Yukatek - Apsidal - Bahareke

Yukatek - Apsidal - Sascab

Yukatek - Rectangular - Bahareke

Yukatek - Apsidal - Pakluum

Yukatek - Apsidal - Composite

Yokot'an

Ch'orti'

Lowlands Kekchi'

Itza'

FIGURE 5.1: The 9 Lowlands houses documented during fieldwork. All other than Itza', Mopan, and Ch'orti' are located in Mexico. Images: Davidson (2001 & 2002).

Pokomchii'

Midlands Kekchi'

Pokomam

Achii'

FIGURE 5.2: The 4 Midlands houses documented during fieldwork; all are located in Guatemala. Images: Davidson (2001 & 2002).

Tzotzil

Tzeltal

Kaqchikel

Tz'utujil

K'ichee'

Popti'

Ixil

Sipakapense

Akatek

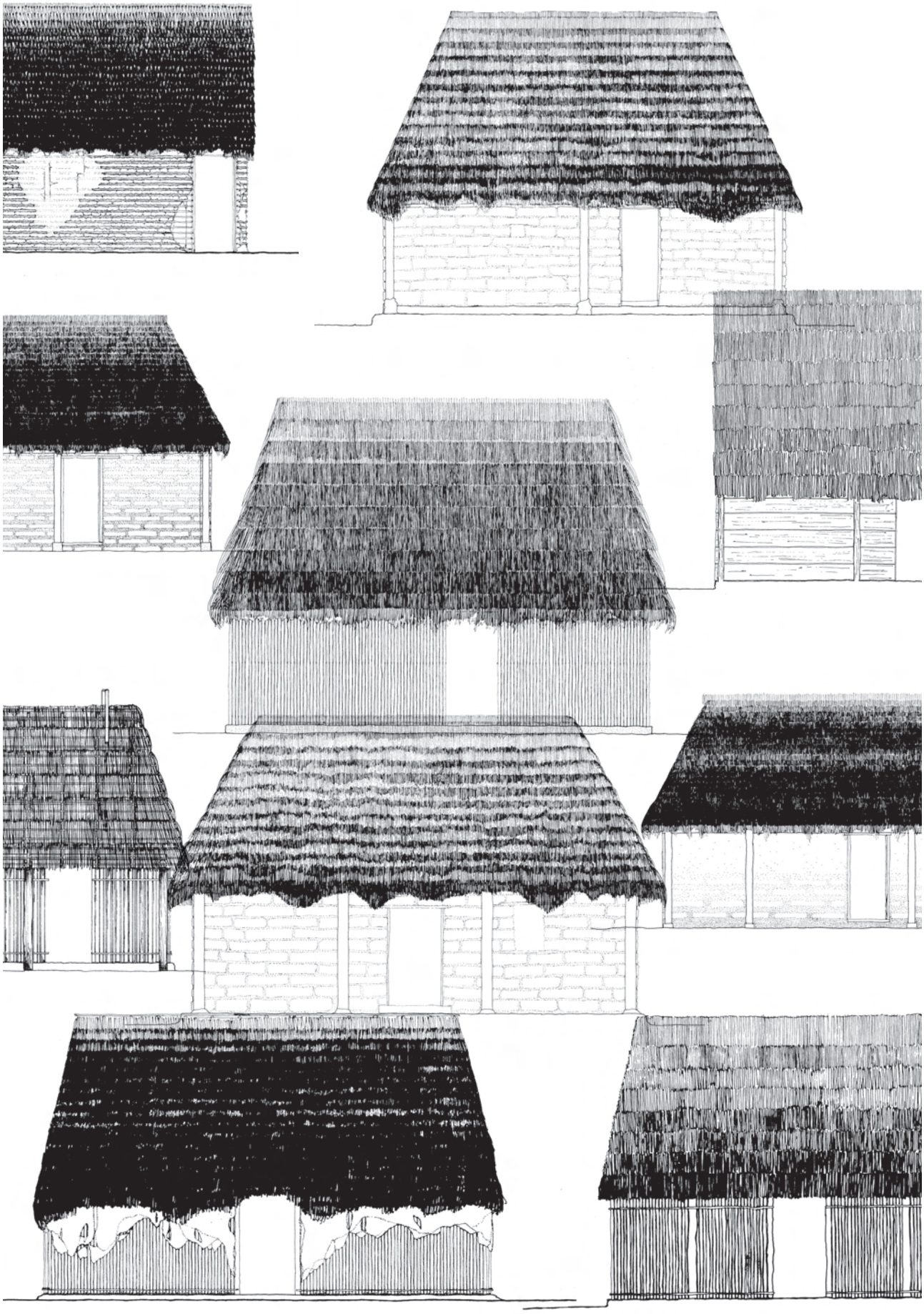
Northern Mam

Western Mam

Q'anjob'al

Southern Mam

FIGURE 5.3: The 13 Highlands house types documented during fieldwork. The Tzotzil and Tzeltal are located in Mexico, while the remainder were all found in Guatemala. Images: Davidson (2001 & 2002).



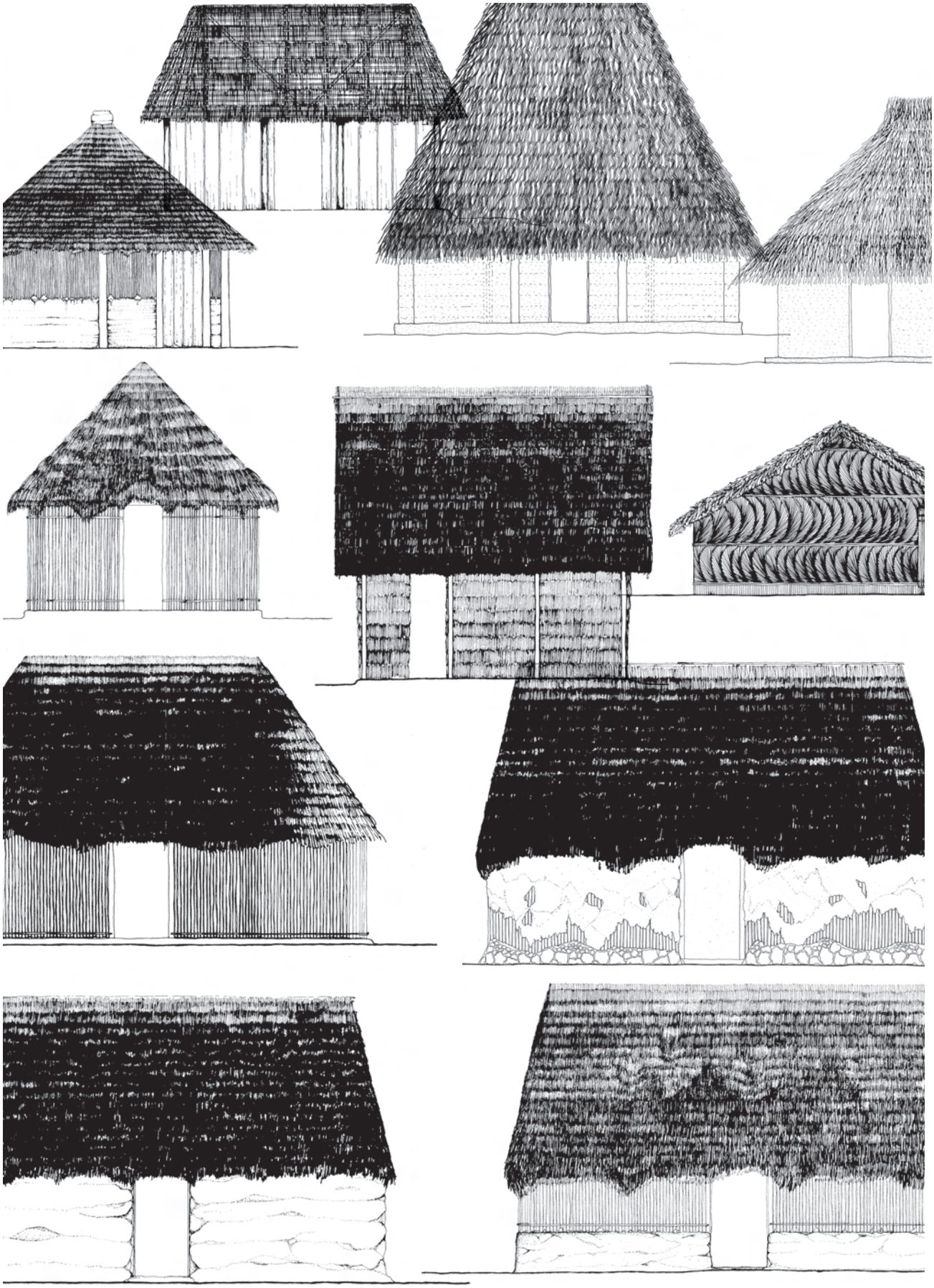
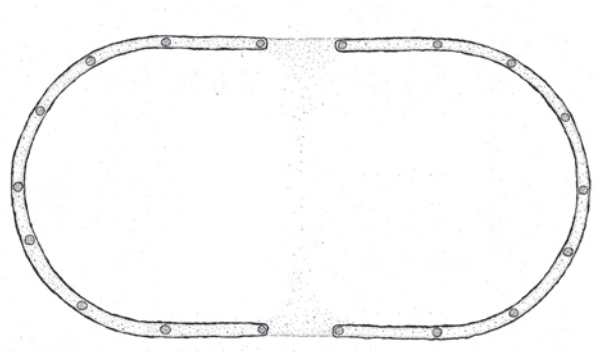
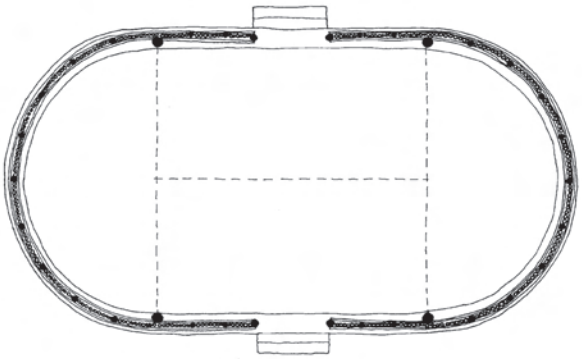
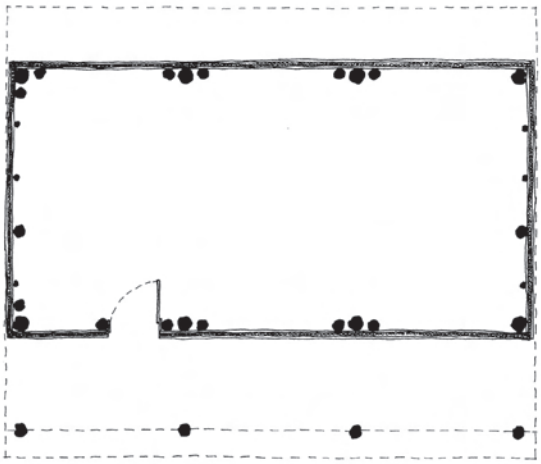


FIGURE 5.4: The 21 pre-Columbian Maya houses recorded during fieldwork. Images: Author, Schindler, Van Hees, Galloway and Mathis.





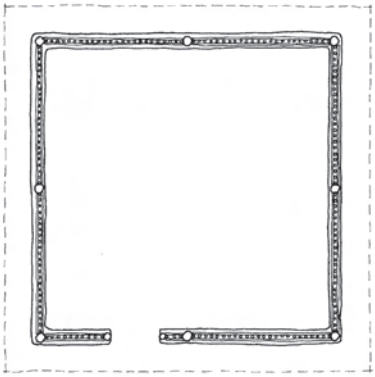


FIGURE 5.5: Images and plan diagrams of the rectangular Pokomchi' (top) and Tz'utujil (bottom) houses. Both languages are part of the K'ichee'an-Mamean family, however, there is no close similarity in their physical architectural forms. Geographic location and climate may explain this as the Tz'utujil and Pokomchi' are located in Guatemala's central Highlands and Midlands respectively. Images: Davidson (2001 & 2002); Plans: Davidson.

Mopan and Itza' houses were observable, whereas the community of Tres Cruces held more than ten examples of traditional Sipakapense house architecture. With the rate and extent of change over the last 70 years since *Modern Maya Houses*, it is not surprising that languages with small populations no longer maintain traditional houses. The author was also unable to locate houses among the Ch'ol, and Wastek, which have relatively large populations of approximately 130,000 current speakers. It is probable that Ch'ol houses remain in the more remote areas of the Lakandon jungle of Chiapas in Mexico, however further research is required to establish if this is the case. It is unclear if Wastek traditional houses still exist as most of the remaining Wastek peoples appear to have integrated into the urban areas surrounding Veracruz in central eastern Mexico.

Other than being language-specific, Maya house architecture is also distinctly square and rectangular. The closest derivation to a circular plan was the Yukatek apsidal (rounded ended) house from Cobá in eastern Yucatán and the Itza' house from San Andres in the northern Guatemalan lowlands (see Figures 5.4 and 5.5). Frederick Starr's 1899 publication, *Indians of Southern Mexico: An Ethnographic Album*, demonstrates that the neighbouring indigenous groups (namely the *Triquis* peoples) to the north of the Maya realm built circular houses,[2] however the researcher observed no circular houses during the current investigation. A review of Starr's work in conjunction with that of Wauchope does however show a predominance of square and rectangular house forms throughout the Mesoamerican region.

The Relationship of Maya House Architectures to Geography & Climate

In reviewing the survey findings there appears to be no great similarity of house architectures between linguistically-related Maya groups; however, there were physical similarities related to geographical location, presumably resulting from the use of commonly available materials found in comparable climatic settings. For example, different construction materials were available in the cold dry Highlands compared to the hot, humid Lowlands; thus, the architectures constructed with these materials naturally differed in form. In general, when discussing Maya cultural histories Mayanists use two geographical categories, namely the Highlands and Lowlands, to describe the physical locations of Maya groups. However, results from the current investigation pointed to a third geographical category, the Midlands, which represent those *casas de paja* that lie at the midpoint of the spectrum between Highlands and Lowlands houses. These architectures accorded to neither Highlands nor Lowlands typologies and it was necessary to attribute a third term to appropriately describe their physical characteristics. However, Midlands houses did share some similarities with both Highlands and Lowlands houses; for example, they both used palm thatch which was commonly found in the Lowlands in conjunction with adobe wattle-and-daub walls similar to some adobe wall constructions occurring in the Highlands.

A comparative analysis of the regional survey exemplifies that of the 27 houses documented during fieldwork, six were found in the Midlands (Pokomchi', Kekchi', Achi', Pokomam, Popb'al Ti' and Ixil), eleven were found in the Highlands (K'ichee', Kaqchikel, Sipakapense, Tz'utujil, Mam, Tzotzil, Tzeltal, Akatek and Q'anjob'al), and nine were found in the Lowlands (Yokot'an, Yukatek, Itza', Mopan and Ch'orti'). Of further interest was that even though some houses were found in Highlands locations, the materials used in house construction were dependent on where that community was located. For example, the Popb'al Ti' (Popti') are commonly known as Highlands people, however, their community of Huitzab'al was located at the nadir of a deep valley, in what was effectively the Midlands. The Popb'al Ti' house reflects this difference, as the climate varies from hot and humid in the summer months to dry and cold during winter.

Given the evidence from the current survey, if houses belonging to the same language group were distributed across different geographical regions they were more likely to have exhibited characteristics of two or even three house forms in response to the differing climates and available materials (see Figure 5.6). For example, as compared to the Highlands K'ichee' house found in Media Luna during the recent investigation, Wauchope presents a Lowlands K'ichee' house from San Sebastian in the Pacific littoral zone of southern Guatemala (Figure A5.10).[3] In addition, the current author documented a Midlands Kekchi' house in Tonten, Alta Verapaz, and a Lowlands Kekchi' house in Chimay, El Petén, Guatemala (Figures A8.2 and A8.9), while Wilk in "Little House in the Jungle" offers a Lowlands house from the Kekchi' community of Aguacate in southern Belize.[4] While this may appear to contradict the language-specificity of house architectures discussed previously, it is important to understand that different geographic locations produce diverse climates, affecting available resources, and resulting in variable responses in house architectures. While climate and geography were not the sole determining factors for house form, they were significant in the configuration of house architectures. For example, if one were to analyse Tables 2 and 3 (Appendix F) in conjunction with Figure 1.2 of Chapter 1, it would be noticeable that the largest Maya language groups (the K'ichee', Kaqchikel, Kekchi', Mam, and Yukatek) were more likely to inhabit a larger geographical area and have exhibited geographical 'sub-type' houses than were less populous Maya language groups. Again, each geographical sub-type displayed a distinct architectural form.

Lowlands Houses

The findings of this investigation show that the traditional house forms predominating in the Lowlands region (Figure 5.1) were of a rectangular plan measuring roughly 4 metres by 8 metres with an overall height to the underside of the ridge beam of between 4 and 4.5 metres. In the Lowlands region, there were three distinct palm species used as roofing material, the *guano*, the *manoco* and the *zacate*. A local variety of *cedro* (cedar) comprised the timber roof structure with four *horcones* (posts) used as the primary roof supports. Wall construction techniques in the region vary according to available

materials and climatic conditions. In the northern Yucatan area (southern Mexico) it was relatively common to find houses utilising a variety of different wall finishes, ranging from *sascab* (a local form of limestone plaster), to *bahareke* (wattle without the daub) and *pak luum* (wattle-and-daub).

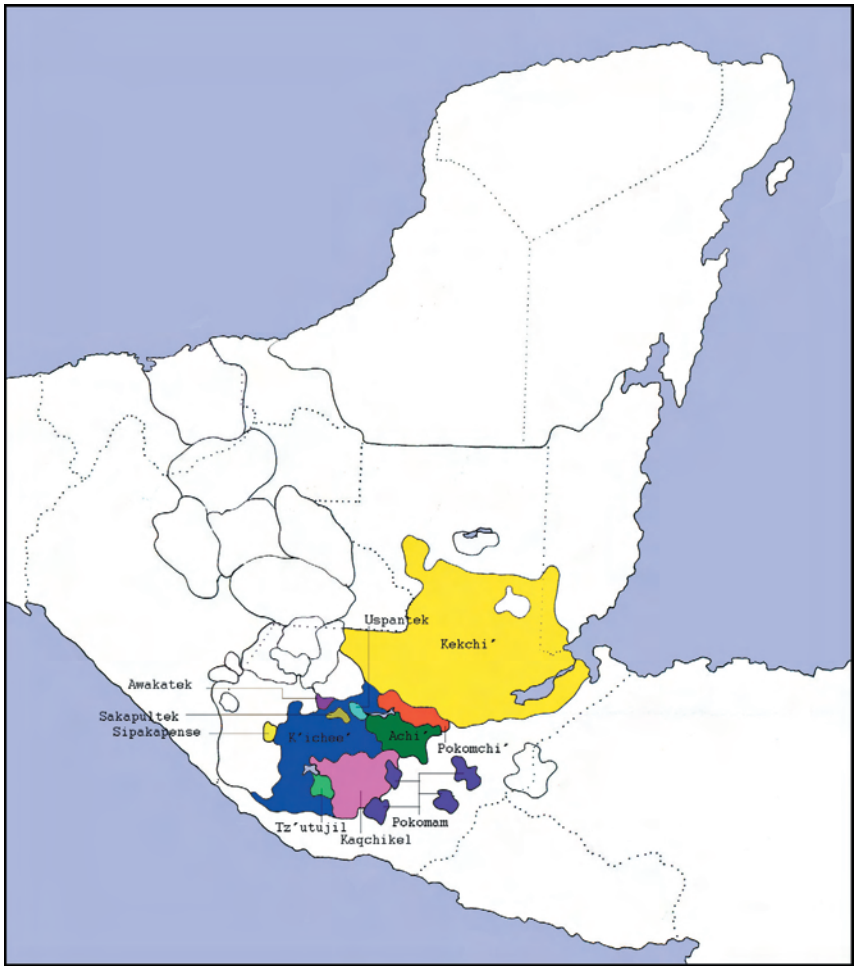
Midlands Houses

The house forms commonly found in the Midlands (Figure 5.2) were of a rectangular plan measuring roughly 4 metres by 7 metres with an overall height to the underside of the ridge beam of between 4.5 and 5 metres. These houses utilisedd *hoja de caña* (sugarcane leaf), *hoja de maize* (maize-leaf) or *palma ah'hij* (a variety of temperate local palm leaf) as the main roofing material, while the roof structure utilisedd a number of locally available timbers, sourced predominantly from either *pino de cipres* (cypress pine), *cedro* (cedar) and *coaba* (mahogany). In a similar manner to Lowlands houses, four main *horcones* (posts) support the roof structure with the wall construction varying from a *bahareke* lattice-work of *caña* (sugarcane stalks) in the lower altitudes (the Pokomam) to an adobe construction in the higher altitudes (the Achi').

Highlands Houses

Highlands *casas de paja* (Figure 5.3) consisted of square and rectangular plans measuring roughly 5 metres by 7 metres with an overall height to the underside of the ridge beam of between 5 and 6 metres. These houses generally comprised thick adobe walls of approximately 300 to 400 millimetres in width with a thick *paja* or *pajon* (two different types of local grass) as the main roofing element. *Pajon* was thicker and longer than *paja* and was the preferred roof material as it enables greater protection due to its thicker cross-sectional area and longer life expectancy. Predominantly, the roof structure was constructed using *pino de cipres* (cypress pine) supported on the adobe block walls below. Typically, the adobe walls comprised small horizontal and vertical timber poles, inlaid with earth, and finished with a fine earthen plaster mix. In describing the common Highlands house in Guatemala in the 1970s, Wagley states:

> The typical Indian dwelling in the Cuchumatán region is a rectangular, one-room structure. The roof is either hipped with four pitched sides, or it is only gabled. There is usually a corridor, formed by an overhanging eave, which is used as a porch for lounging and storage. The house has a floor of hard-packed earth, swept clean, and has one door but no windows. Houses vary according to the economic resources of the family, to the materials used, and to the type of construction. The walls may consist of upright poles, wattle-and-daub or adobe bricks. The walls of the better wattle-and-daub and adobe homes are often coated with white lime. Roofs also vary: the majority of hipped roofs are of straw thatch, but many houses are roofed with ceramic tiles. Nearly all Cuchumatán houses have a sweat bath as an annex. This small separate structure (*chuj* in Mam) is made of rock and adobe walls, with a flat roof of planks covered with adobe, and it is protected from the heavy rains by a free-standing thatched roof.[5]



Lowlands Kekchi'

K'ichee'

Achii'

Midlands Kekchi'

Pokomam

Pokomchii'

Kaqchikel

Sipakapense

Tz'utujil

FIGURE 5.7: The nine K'iche'an house types documented during the regional survey. All are located in Guatemala. Photos: Davidson (2001 & 2002).

> The furniture within the family dwelling is sparse and simple. The one room served as kitchen, living quarters and bedroom for a man, his wife and their unmarried children. The kitchen is one corner of the room. The fireplace, usually on the floor, consists of three stones over which is placed the flat circular ceramic griddle to cook tortillas (*xe'o'n* in Mam). A high platform or shelf stores food. Various gourd and ceramic utensils of various shapes are hung along the wall...Each nuclear family in the group occupies a separate household. Newly married couples move to the house of the groom's parents, and in time a house is constructed for them near the parental dwelling.[6]

Thirty years later the author's fieldwork has revealed a strikingly similar layout and domiciliary pattern.

Regional Survey Findings by Linguistic Family

In classifying Maya houses, it was useful to use both language and geography. However, for clarity, the following discussion comparatively analyses the house architectures documented during fieldwork by linguistic family. In order to illustrate both the commonalities and diversities contained within the pan-Maya architectural tradition, information has been drawn from the individual house architectures presented in the Appendices. In compiling information on physical architectural form, material usage, socio-spatial behaviours, geographical distribution of house types, familial/historical linguistic linkages, and recent demographic information, discussion focuses on the five major families/branches of the Maya language tree, the Mamean, Yukatekan, Ch'olan-Tzeltalan, K'ichee'an and Q'anjob'alan-Chujean. The outcome of this discussion leads to the broader pan-Maya comparative analysis later in the chapter.

Mamean House Architectures

The Greater Mamean linguistic branch contains five of the remaining 28 Maya languages, and consists of the Awakatek, Ixil, Tektitek, Tacanec and Mam languages. The Ixil and Awakatek inhabit the central Western Guatemalan Highlands, and the Mam, Tektitek and Tacanec are located in the Western Highlands bordering Chiapas in southern Mexico. Due to its large population, the Mam straddle different geographical locations within their linguistic boundaries, extending from the higher altitudes of the Guatemalan western Highlands to the lower littoral zone of the southern Pacific coast of Guatemala. At the time of writing, the Summer Institute of Linguistics listed the population of Awakatek-speaking Maya as 18,000; Ixil as 69,000; Tektitek as 4,000; Tacanec as 20,000; and Mam as 520,000. As Vogt explains in *The Handbook of Middle American Indians,* the Mam, in approximately 2600 B.C., were the first Maya group to 'expand' away from, rather than migrate from the proto-Maya community.[7] Of the four Mamean houses documented during this survey, three were Mam and one was Ixil, while Tektitek, Tacanec and Awakatek houses were not documented. The following description of physical properties of Mamean houses should be read in conjunction with Appendix B of this thesis.

Language Group Comparison

The Mamean family represents four of the 27 recorded houses. Although there were slight variations among the four *casas de paja* surveyed, the Mamean family of houses demonstrate less variety in architectural form than their linguistic relatives, the K'iche'an (Appendix A). Given that the majority of these groups inhabit the Guatemalan Highlands and experience similar climatic conditions it is possible to claim that climate was a determining influence on the house form; however, the results of the regional survey proved that other than the Yukatek, the Mam had the greatest number of variants of the remaining 28 language groups. The fact that all three were Highlands houses discounts geography as a determinant of architectural form. On reflection, the cause for a distinct variation in architectural form appears to have been in language dialect rather than other factors such as climate and available resources. This was likely the case in the Mam houses found in the northern Mam dialect region in Todos Santos Huehuetenango, the western Mam house in Aldea San Luis and the southern Mam house in San Martín Sacatepéquez with the derivation of house style conforming to the sub-cultural framework that had created it. Just as each region had a distinct form of language, culture and traditional vestige it appears that the form of the traditional house varied according to the same rules.

Roof Properties

Along with the Yukatekan (Appendix C), the Mamean houses exhibited the least variance in roof form of the houses in this investigation with all four houses presenting grass (*paja or pajon*) thatched hipped roofs and rectangular plans. Of the four houses documented, the Mam house from Todos Santos have the most distinctive roof form with its cross-form decorative ridge form (Figure B6.4). The San Luis was the only house in the present selection to have a dedicated storage area in the roof cavity while the remaining Mamean houses had smaller platforms built into the cavity for storage.

Wall Properties

In addition, the Mamean family of houses exhibited varying wall constructions with no one finish taking precedence over the others. For example, among the four houses, there were three different wall treatments; adobe block in the San Luis house, adobe wattle-and-daub in the San Martin house, and vertical timber panelling lashed to a timber substructure in both the Ixil and Todos Santos houses. Three of the houses relied on the structural timber supports of the four main house posts while the San Luis house depend on the structural integrity of the adobe block walls for support. Photographic archival evidence presents another house from Todos Santos with the same distinctive roof form but with adobe block walls in lieu of vertical timber panels (Figure B6.10).

Domiciliary Patterns & Sociospatial Behaviours

Three of the four household compounds in this selection consisted of a rural setting with two or more houses set around an external courtyard space and circumscribed by the family *milpa*. The Mamean houses in this group contained all functions within their single-room structures, with the courtyard separating extended kin relationships rather than dividing functions as commonly seen in Yukatek houses. All family compounds in this group had ancillary structures such as sweat-baths, ovens, and animal pens contained within.

Internally, three of the four Mamean houses maintained floor mounted three-stone hearths while the Mam San Luis house was the only one to not have a three-stone hearth (Figure B7.3). The location of the hearth had metaphysical associations and served to divide the house into gender specific areas. Once again, the hearth had a distinctly feminine association with the central interior left vacant and furniture peripherally located against the walls of the dwelling. There were no internal dividing walls among any of the houses surveyed in this group, and the construction method of each house was similar in all groups with the location of the four main house posts in three of the four houses, commonly set in the four corners and used to establish the rectangular floor plan. House construction was undertaken communally, with the rules for the structural configuration known by all members of the family. These rules were linked to a specific set of religious beliefs (see Chapter 6), with the physical configuration of the house representing and reinforcing this view. It was reported by local Mamean informants that the houses presented in this survey were close to being the last of their kind with some predicting that within a generation they would be gone.

Yukatekan House Architectures

The Yukatekan linguistic branch consists of four of the remaining 28 Maya languages and comprises the Yukatek, Lakandón, Itza' and Mopan languages. All four Yukatekan languages are located in the Lowlands region of southern Mexico and Guatemala with the Yukatek residing in the Yucatan Peninsula of southern Mexico, the Lakandón in Chiapas, southern Mexico, and the Itza' and Mopan peoples in the El Petén region of Guatemala. At the time of writing, the Yukatek peoples maintained the largest geographical area of all Maya languages, extending from the Gulf of Mexico, east to the Caribbean Coast, south to the northern borders of Guatemala and Belize and west to the Chiapas Ranges. The Summer Institute of Linguistics lists the population of Yukatek-speaking Maya as 740,000; Lakandón as 1,000; Itza' as 1,800; and Mopan as 2,600; the Chicomulseltek language was extinct. In *The Handbook of Middle American Indians* Vogt presents the early migration patterns of the Yukatekan linguistic branch:

Ixil

Southern Mam

Northern Mam

Western Mam

FIGURE 5.8: The five Mamean houses documented during the regional survey. All are located in Guatemala. Photo: Davidson (2001 & 2002).

> About 1600 B.C. the Yucatec migration moved in the same direction [Northeast]. By about 1400 B.C. the Lacandon had separated from the Yucatec and had settled down in their historic habitat. The Yucatec seem to have been located west of the Lacandon at this time because they were in close touch with the Huastec. This connection between Yucatec and Huastec was broken by about 1200 B.C., probably by the northwest movement of the Huastec toward their present habitat.[8]

The following description of physical properties of Yukatekan houses should be read in conjunction with Appendix C of this thesis.

Language Group Comparison

A review of fieldwork findings shows that the Yukatekan family comprised six of the 27 recorded houses, with the Yukatek themselves accounting for five of the six dwellings located. There were more Yukatek traditional houses observed than any other group or region of the entire survey; however, this was not the case for the Itza' where only three houses were observed. The author was unable to locate Lakandon houses during fieldwork, although as shown in Appendix C, in conjunction with a small amount of photographic archival evidence available the author was able to photograph a traditional religious structure (God House). Unlike other Maya linguistic families where language distribution varied climatically and geographically, the Yukatekan groups inhabited the climatically uniform tropical Lowlands of Guatemala and southern Mexico. Also, as opposed to the language-specific house forms of the Mamean and K'iche'an families, two of the Yukatekan languages, the Yukatek and Itza', shared the same apsidal wattle-and-daub house architecture. The likeness between Yukatek and Itza' traditions pointed to a shared history of house architecture, with historical accounts showing them to have separated from each other in 1450 A.D.[9] Of the five Yukatek house types found, four contained apsidal floor plans while the fifth maintained a rectangular plan. It was evident that there were no square plans among the Yukatekan-related houses. Further empirical research is needed to establish the exact reasons for the morphological derivation of apsidal plans. As with all Maya houses, the Yukatek dwellings were symmetrical, with three of the five houses containing two doors placed opposite each other in their long facades. Two other houses (Yukatek apsidal *bajareque* and Itza') had only one doorway that served as both entrance and exit to the house.

Roof Properties

All six Yukatekan houses presented with the same palm (*guano*) thatched hipped roofs and none utilised the roof cavity for dedicated storage. On average, the Yukatekan houses were among the tallest and largest of the survey, maintaining an average floor to ridge height of between 4.5 and 5 metres and a plan dimension of 4 metres in width by 8 metres in length.

Wall Properties

The Yukatekan family of houses exhibited varying wall constructions with no one finish taking precedence over the others (Figure 5.1). Among the six houses surveyed, four different wall finishes were documented with two of the six houses utilising what was called in the region a *bahareke che* style, comprising a series of vertical timber battens circumscribing the interior spaces of the house. The *pakluum* Yukatek house and the Itza' were both finished in wattle-and-daub that consisted of vertical timbers overlaid with an adobe and lime plaster. Another Yukatek house had a *sascab* finish, which consisted of a timber post-and-beam structure with inlaid stones, overlaid with a lime-plaster. The final wall finish seen among Yukatek houses was the *che-sascab*, a combination of the two finishes described above (Figure 5.9).

Domiciliary Patterns & Socio-spatial Behaviours

There were two different domiciliary patterns evident in the Yukatekan groups, dependent on whether the property had an urban or rural setting. Four of the six Yukatekan houses surveyed (including the Itza') were located in urban centres with both settlement systems distinct but sharing a number of common domiciliary patterns. These commonalities relate to the maintenance of functionally specific house configurations with houses in this group placing living/sleeping and cooking facilities in separate dwellings typically configured around an exterior courtyard or patio space. This pattern was unique to the Yukatek, as the majority of other Maya household compounds surveyed had combined functional relationships under the one roof. Other commonalities between urban and rural settings were the inclusion of ancillary buildings on the property such as animal pens, a maize storage shelter, a chicken coop, fruit trees and other produce. A one metre high stone wall borders many family compounds in urban settings, while the family *milpa* was commonly part of a larger shared agricultural landholding located on the outskirts of the respective community. Household compounds in rural settings typically contained the same spatial layout as their urban counterparts but in a more dispersed arrangement. In contrast to houses in urban centres, the family *milpa* in rural situations was generally located in close proximity to the family living space.

Whether located in an urban or rural locale, socio-spatial patterning within dwellings do not appear to change. Thus, the commonly observable position of the hearth in a corner of the house, again designates gender-specific areas within the house. All six Yukatekan houses had floor-based three-stone hearths in conjunction with four timber posts employed as the main structural system for the house. Typically, these four main posts were set along the two longer facades and in connection with two major roof beams to establish the rectangular floor plan. The central area of the house interior was again left vacant with furniture located against the peripheral walls of the dwelling. Hammocks were the predominant method for sleeping, and there were no internal dividing walls among any of the houses surveyed in this group. Again, construction of Yukatekan houses was undertaken communally

with the semantic and practical physical rules for the structural configuration known by all family members. In a similar manner to the Mamean and K'iche'an social contexts, these rules were again linked to a particular set of religious beliefs about the world and its relationship to humankind.

Yukatek & Itza' House Traditions

As mentioned previously, one of the most interesting outcomes of the regional survey was the discovery that Yukatek *pakluum* and Itza' houses shared the same apsidal plan form and material finish, despite their being geographically separated (see Figure 5.4). Both groups occupy the Maya Lowlands region and have had a large degree of contact in the past. Based on the author's fieldwork, not only were the traditional Yukatek and Itza' house forms of the contemporary era exactly the same, but the plan shape, roof pitch, structural detailing, thatch connection and materials used in their construction shared inherent similarities. This finding was important as the majority of Mayanist literature on Maya traditional houses attributed apsidal houses to the Yukatek alone. The current author conjectures that the Itza' may have been the original designers of the apsidal house and the Yukatek borrowed from them or vice versa. The Itza' were thought to have been heavily influenced by peoples from central Mexico, leading one to hypothesise that perhaps the apsidal form was a compromise between the Yukatek form and the Aztec / Mixtec belief.[10] Archaeological and ethno-historical evidence supports the belief that the Itza' migrated to the shores of Lake Petén Itza' from northern Yucatán around 1450 A.D.[11] In "Indigenous Linguistic Revitalization and Outsider Interaction: The Itzaj Maya Case" Hofling presents the 16th Century Yukatek text, *Books of Chilam Balam of Chimayel*, which tell of the Itza' fleeing the region of Chichen Itza' in northern Yucatan to found their island capital of Tayasal in Lake Petén Itza' where they resisted Spanish invasion until 1697, some 150 years after the subjugation of the majority of Maya groups.[12]

The explicit correspondence in architectural forms between Yukatek and Itza' houses implies a separate parallel continuity of house traditions for at least the last 550 years, which makes this situation most likely pre-Columbian in origin. Given that hundreds of kilometres separate each of these language groups, neither appears to have diverged from their original architectures and respective traditions during this 500 year post-contact period. Another possible deduction was that different language groups under similar climatic conditions with an historical connection maintained tradition practices in the face of enormous pressures to discontinue. At present, this continuation was far less evident and cannot be conclusively proven in the Yukatek region without the complementary observation of the Itza' house type and vice versa. The Itza' and Yukatek relationship further strengthens the argument that other *casas de paja* seen in this investigation were originally pre-Columbian. Significantly, through forms of visual anthropology such as photographic and architectural documentation, one might begin to foster architectural theories of such cultural and historical connection. During fieldwork, local people in both San Andres and San Jose reported that the Itza' house documented in this survey was close to being the last of its kind.

Yukatek - Apsidal - Pakluum

Yukatek - Apsidal - CheSascab

Itza'

Yukatek - Apsidal - Bahareke

Yukatek - Apsidal - Sascab

Yukatek - Rectangular - Bahareke

FIGURE 5.9: The six Yukatekan houses documented during the regional survey. The Itza' and Mopan houses are located in Mexico with the remainder located in Guatemala. Photo: Davidson (2001 & 2002).

Ch'olan-Tzeltalan House Architectures

The Ch'olan-Tzeltalan linguistic branch represents five of the 28 Maya languages existing at the time of writing and comprises the Ch'ol, Yokot'an (Chontal), Ch'orti', Tzotzil and Tzeltal Maya languages. Four of the five Ch'olan-Tzeltalan languages inhabit the geographically diverse Chiapas and Tabasco regions of southern Mexico. Only the Ch'orti' language group defies this geographic proximity, being located in south-eastern Guatemala, close to the Honduran border. Of the five Ch'olan-Tzeltalan languages, the author located 'living' examples of all but Ch'olan houses; however, archival research confirms the Ch'olan house form. As of 2006, the Summer Institute of Linguistics lists the population of Ch'ol-speaking Maya as 134,000; Yokot'an as 55,000; Ch'orti' as 30,000; Tzotzil as 265,000; and Tzeltal as 190,000. In *The Handbook of Middle American Indians* Vogt discusses the geographical distribution of Ch'olan-Tzeltalan family in terms of their early migratory patterns away from the original proto-Maya community:

> The fourth exit from the protocommunity was the Chontalan [Yokot'an], which occurred about 900 B.C. They probably also moved into the Usumacinta drainage, for the linguistic evidence suggests they were in touch with the Yucatec and Lacandon in this area for about 1000 years. The separation of the Chol and Chorti from the Chontal [Yokot'an] did not occur until A.D. 700 and 900, respectively. Hence the appearance of the Chorti in eastern Guatemala is relatively recent. The fifth migration was Tzeltalan about 750 B.C., with a stop somewhere between the Yucatec, Chontalan, and Lacandon. Between A.D. 500 and 750 they moved west into the highlands of Chiapas, where Tzeltal differentiated from Tzotzil about A.D. 1200.[13]

The following description of physical properties of Ch'olan-Tzeltalan houses should be read in conjunction with Appendix D of this thesis.

Language Group Comparison

In reference to the regional survey, the Ch'olan-Tzeltalan family contained four of the 27 recorded houses. Although linguistically related, these language groups featured distinct differences in architectural house form with no two groups sharing the same architecture in all facets, although there were some overlapping attributes. The Ch'olan-Tzeltalan group ranges across a diverse climatic and geographical region, inhabiting the Chiapas Highlands, the tropical Lowlands of Mexico and eastern Guatemala. Given that these they occupied different geographical regions, and thus experienced different climatic conditions, it was possible that climate was one of the determining factors in house form variation witnessed in the Ch'olan-Tzeltalan family. Among the dwellings of this group, Tzotzil and Tzeltal houses exhibited square floor plans, whereas the Ch'orti, Ch'ol (archival evidence) and Yokot'an houses had rectangular floor plans. Furthermore, there was a distinct similarity between Tzotzil and Tzeltal Highland houses, which spoke to a shared social history, as suggested by historical

migration patterns, splitting from each other approximately 900 years ago. Both the Tzotzil and Tzeltal houses were among the tallest in the survey with an average height of 5.5 metres to the roof apex.

In comparing the Yokot'an houses with the archival evidence of Ch'ol house traditions (Figure D2.2 of Appendix D), and the Yukatek rectangular *bahareke* house, it appears that these three houses shared similar architectural forms. This finding supports the historical linguistic evidence that the Yokot'an were in contact with the Yukatek for almost 1,000 years, thus inhabiting the same region, sharing a similar climate and utilising similar material resources for generations. Moreover, it supports Vogt's assertion that the Ch'ol were originally part of the Yokot'an language family, having migrated away some 1,300 years prior to the present time. In saying this, these houses were not replicas of each other and differ slightly in scale and physical shape. The houses in this survey group were again symmetrical in plan and elevation, with three having only one doorway, while, in a similar manner to the Yukatek, the Yokot'an house had two doors positioned opposite of each other in the long facades.

One of the most striking observations arising from the house survey was how different the physical form of the Ch'orti house was in relation to its Ch'olan-Tzeltalan relatives. One explanation for this may be the great distance between the current location of Ch'orti' and their Ch'olan-Tzeltalan relatives, suggesting a past migration and the cultural re-establishment of an architectural tradition. This observation supported historical evidence that the Ch'orti' migrated away from the Yokot'an around 900 years ago to establish themselves in a different region with dissimilar material resources.[14] In "Split Ergativity in the History of the Ch'olan Branch of the Mayan Language Family", Law, Houston and Robertson observe that Eastern and Western Ch'olan branches are quite distinct, and argue for the positioning in situ of Ch'orti' (and its ancestors) as the lingua franca of the Classic period.[15] In further communication with the current author, Houston states that there was a Ch'olan linguistic "belt" across the base of the Yucatan peninsula which could have resulted in shared practices, as the areas were known to be in close contact in colonial times.[16]

In relation to the current analysis, the Ch'orti' house was one of the smallest documented in the survey with an overall ridge height of less than 4 metres and a plan of 6 metres by 5 metres.

Roof Properties

The Ch'olan-Tzeltalan family exhibited some of the most distinct roof forms in the entire survey, with the Yokot'an house having a hipped roof, the Ch'orti' a gabled roof and the Tzotzil and Tzeltal houses pyramidal roof forms. The Tzotzil and Tzeltal houses utilised grass (*paja or pajon*) for thatching while Yokot'an and Ch'orti houses thatched their roofs with a palm grown locally. None of the houses in

the group used the roof cavity for dedicated storage and all four had smaller storage platforms built into the roof space. The Ch'ol house in the archival images utilised a similar palm (*guano*) thatch to Yokot'an and Yukatek houses (Figure D2.2).

Wall Properties

As seen in other areas, there was a great difference in wall materials used, with the Tzotzil and Tzeltal implementing a wattle-and-daub construction while the Yokot'an and Ch'ol houses utilised a *bahareke*-style timber batten construction in a similar manner to their neighbours the Yukatek. The Ch'orti house was again significantly different with the use of woven palm as the main wall finish.

Domiciliary Patterns & Socio-spatial Behaviours

Domiciliary patterns differed between the four Ch'olan-Tzeltalan houses surveyed with the Tzeltal and Yokot'an located in urban environments and the Ch'orti' and Tzotzil located in rural environments. Typically, the common rural pattern of the family compound consists of two or more houses in a courtyard configuration set around an external patio and surrounded on all sides by the family *milpa*. The pattern in urban centre was similar except that the *milpa* was generally located some distance from the community on either family-owned or communal lands. In addition, there was a difference in the types of ancillary structures depending on whether the house was located in the Highlands (where adobe sweat-baths and ovens were common) or the Lowlands where *bahareke* style storage shelters and bee hives were more common.

The regional survey showed that Tzotzil and Tzeltal languages exhibited design traits that confirm their Highlands setting, namely heavy set adobe wall construction and grass thatch roofing. In contrast, the Ch'ol, Yokot'an and Ch'orti' languages exhibited Lowlands traits, namely vertical palm-stalk wall construction and palm-frond thatched roofing. Although there was a marked difference between Highlands and Lowlands houses, the physical delineation in houses of this group was not totally associated with geographical separation. For example, Tzotzil and Tzeltal houses shared a similar dwelling scale, having a square floor plan typically 5 by 5 metres in size, with an overall height of 6 metres. Family compound configuration was another area where Tzotzil and Tzeltal house architectures reveal similarities with neither group showing evidence of the courtyard configuration so prevalent in the socio-spatial patterning of other Maya language groups. Both Tzotzil and Tzeltal houses possessed areas for sleeping, cooking, preparation and storage within their single-room structures. There appeared to be no obvious reason for this functional differentiation.

Of the remaining three language groups, the Ch'orti' house exhibited the greatest degree of physical differentiation to its Lowlands counterparts. As opposed to Yokot'an and Ch'ol houses, which measured eight metres in length, five metres in width and five metres in height, the Ch'orti dwelling was smaller

Tzotzil

Ch'orti'

Tzeltal

Yokot'an

FIGURE 5.10: The four Ch'olan-Tzeltalan houses documented during the regional survey. Photo: Davidson (2001 & 2002).

in scale, being six metres in length by four in width and three metres in height. The regional survey showed that while all three Lowlands groups shared resemblances such as rectangular floor plans and gabled roof forms, the Ch'orti' were the only group to include a courtyard arrangement with more than two houses constructed within the family compound. Three of the four households (Yokot'an, Tzotzil and Tzeltal) in this group favoured single dwellings on a property as opposed to the common multiple dwellings around a courtyard scenario in most other Maya household compounds. The Ch'orti' household setting was the only one of this group to accord with the predominant domiciliary pattern, containing up to three separate dwellings on the property reflecting the extended family kinship organisation and featuring a number of ancillary structures for the storage of agricultural surplus and the shelter of animals. Moreover, the regional survey shows that the configuration of the Ch'ol domiciliary setting followed their linguistic relatives in maintaining a single house within the family compound.

To a certain degree, the internal socio-spatial patterning within the house differed in this group with Tzotzil, Tzeltal and Ch'orti' locating the hearth internally while the Yokot'an positioned the hearth in a small lean-to structure adjacent to the main dwelling. Typically, in those houses with the hearth located internally, it was placed in either a corner location or in the centre of the house. As with all Maya houses surveyed, this placement established the designated gender-specific areas within the house; the hearth was a distinctly female zone. A review of Appendix D shows that Tzotzil and Tzeltal houses maintained floor based three-stone hearths, while the Yokot'an and Ch'orti' mounted their hearths on adobe platforms approximately 300 millimetres off the ground. Characteristically, the central area of the house interior was vacant with furniture peripherally located against the walls of the dwelling. Three of the four houses had single rooms with no internal dividing walls, whereas as per de Landa's 1566 description[17] of Yukatek houses, the Yokot'an was the only house in the entire survey that exhibited an internal partition running across the main central space of the house. Apparently, this partition maintained a division between the public and private internal zones of the house.

Even though their physical forms differed somewhat in terms of scale, material usage and floor plan configuration, the sub-framing structural design of Ch'olan-Tzeltalan houses was similar throughout, comprising four main structural posts set either in the corners of the square houses or along the long facades of rectangular houses as in the Yokot'an and Ch'orti'. The placement of the main structural posts was another element that the Yokot'an house shared with its Yukatek neighbours. House construction was again a family affair with the rules for the structural configuration universally known. In terms of the numbers of houses seen during fieldwork, the house survey recorded two examples of Tzotzil and Tzeltal houses and more than five of the Yokot'an and Ch'orti'. The investigation found no examples of the Ch'ol house, although the author suspects that Ch'ol houses may still remain in the Lacandon

jungle of Chiapas. As demonstrated, analysis of the physical forms of the house architectures above supports linguistic evidence regarding the cultural separation and migration of Maya languages away from the proto-Maya community and language. It was possible to make a number of morphological observations from differences of architectural form among those groups that split from the proto-Maya community earlier, and similarities of form between those groups who split at a later date.

K'iche'an House Architectures

The Greater K'iche'an linguistic branch contains ten of the remaining 28 Maya languages, and consists of the Achi', K'ichee', Tz'utujil, Kaqchikel, Sipakapense, Sakapultek, Kekchi', Uspantek, Pokomam and Pokomchi' languages (Figure 5.7). The K'ichee', Tz'utujil and Kaqchikel language groups inhabit the central western Highlands of Guatemala, while the Achi', Pokomchii', and Pokomam peoples occupy the Midlands of central Guatemala. After the Yukatek of southern Mexico, the Kekchi' peoples have the largest geographical area of all ethnic Maya lands with their region extending from the Verapaz in central Guatemala to the Caribbean Coast of southern Belize. At the time of writing, the Summer Institute of Linguistics[18] listed the population of Achi'-speaking Maya as 85,000; K'ichee' as 2,330,000; Tz'utujil as 85,000; Kaqchikel as 552,000; Sipakapense as 8,000; Sakapultek as 37,000; Kekchi' as 400,000; Uspantek as 3,000; Pokomam as 49,000; and Pokomchii' as 92,000.[19] In *The Handbook of Middle American Indians* Vogt presents the early migration patterns of the K'iche'an linguistic branch:

> The sixth migration from the protocommunity were the Tojolobal, who made their exit about 400 B.C. They were followed by the seventh migration of Kekchian [Kekchi], which McQuown thinks was a slow movement to the east with the divergence between Pokonchi [Pokomchi'] and Pokomam occurring A.D. 900. The next exits were the Chuh [Chuj], moving to the north, and the Quichean [K'ichee'], moving to the southwest beginning about 200 B.C. The Quichean case is interesting because this group apparently remained together until about A.D. 1200, the time at which internal divergence in the Quichean languages begins.[20]

The following description of physical properties of K'iche'an houses should be read in conjunction with Appendix A of this thesis.

Language Group Comparison

The K'iche'an family contained nine of the 27 recorded houses. The author documented eight houses of the ten K'ichee' languages, with only the Uspantek and Sakapultek remaining to be documented (see Figure A1.1). Due to their remote location it was difficult to determine whether Uspantek and Sakapultek houses still exist. Although linguistically related, these language groups all displayed distinct differences in architectural house form. Given that the majority inhabited the Guatemalan Highlands and experience similar climatic conditions it was not possible to state that climate was the

sole determinant of house form. The regional survey confirms that those language groups presenting more than one traditional house in their architectural repertoire were the Tz'utujil, K'ichee' and Kekchi'. As these particular groups have a diverse geographical area, they typically had both a Highlands and Lowlands subtype of the traditional house. For example, the author was able to locate two different Kekchi' houses the first in the Midlands of Alta Verapaz, and the second in the Petén Lowlands of northern Guatemala. It was evident from the research findings that the major reason for this difference was geographical location, climatic conditions, and the resultant local material resources resulting in a different house configuration. However, the Tz'utujil did not conform to this situation as archival evidence illustrates two house forms, the pyramidal square plan and hipped rectangular plan built alongside each other in Santiago Atitlán (Figure A4.16). Local informants reported during fieldwork that the houses of the K'iche'an family documented in this survey were close to being the last of their kind.

Although there were some overlapping attributes, house form was distinctly language-specific with no two groups sharing the same house architecture in all facets. There was a parallel between K'ichee' and Sipakapense Highland houses even with a large degree of geographical distance between the two language groups. Additionally, there was a similarity in form between Kekchi', Achi' and Pokomchi' houses with slight differences in material usage between them. The evidence from the survey supports historical migratory patterns (as presented above) that the Pokomchi' and Achi' diverged from the Kekchi' around 1100 years ago, thus inhabiting the same region, sharing a similar climate, and utilising similar material resources for generations. In saying this, these houses were not replicas of each other and differ slightly in scale and physical shape. Again, there was a predominance of rectangular plans with only the Pokomam, Kaqchikel and Tz'utujil houses exhibiting square plans in the nine houses surveyed. Tz'utujil and Kaqchikel houses were distinctly different to the other K'ichee'-related groups. Primarily, this difference was manifested in the roof form of the Kaqchikel house, and the wall finish and roof form of the Tz'utujil dwelling.

Roof Properties

As a group, the K'iche'an houses exhibited the most variance in roof form of the houses in this investigation. Four of the nine houses (Pokomchi', Achi' and both Kekchi') displayed gable roofs, the Pokomam, K'ichee' and Sipakapense houses had hipped roofs, and the Kaqchikel and Tz'utujil houses pyramidal roofs resulting from their square plans. Pokomchi' and Achi' houses were the only dwellings in the analysis in which the entire roof cavity was dedicated for storage while the remaining K'iche'an houses had smaller platforms built into the roof cavity for storage. Five of the nine K'iche'an houses utilised grass (*paja or pajon*) thatch, with all bar the Pokomam living in Highlands locations. The Pokomchi' and Achi' used a local palm (*aj)* for thatch while the Midlands Kekchi' (the only house of its type surveyed) uses maize leaf and sugarcane stalk, thus necessitating

a steeper roof pitch (Figure A8.2). Furthermore, the Lowlands Kekchi' house relied on palm (*sacate*) leaf for weather protection. In comparison to the 27 houses recorded during the survey, the inverted earthen-pot protecting the apex of the Tz'utujil roof was unique. As discussed previously, Wauchope's research presents a second Tz'utujil dwelling type that exhibited a thatched gable roof with the ridge protected by broken potsherds, and rectangular floor plan, which stands in stark contrast to the square pyramidal house documented during the present survey (Figure A4.13 Appendix A). There appeared to be no explanation of this specific variation, with neither climate nor available resources elucidating the difference. The Kaqchikel house with its 6.5 metre high pyramidal roof was the tallest of all the Maya houses surveyed (Figure 5.3), while the Sipakapense house exhibited one of the most distinct ridge cap techniques consisting of woven thatch bundled together and lashed to the timber roof structure below (Figure A6.7).

Wall Properties

In addition to their noteworthy roof properties, the K'iche'an family of houses exhibited varying wall constructions, with no one finish taking precedence over the others. For example, two houses (K'ichee and Sipakapense) utilised adobe block construction common to their Highlands setting, while the Tz'utujil house uses volcanic rock and cane vertical battening. Elsewhere, Achi' and Kaqchikel house were constructed with wattle-and-daub walls and Pokomchi' houses used the same palm thatch for wall construction as their roof material. Midlands Kekchi' construct their dwellings with horizontal timber panelling over vertical timber wall supports, while the Lowlands Kekchi' and Midlands Pokomam build with vertical timber battening in a similar fashion to Yukatek *bahareke* wall construction.

Domiciliary Patterns & Sociospatial Behaviours

There was a common domiciliary pattern in six of the nine groups with the exception of Tz'utujil and Lowlands Kekchi' houses, which were somewhat different to the others. Commonly, the K'iche'an family setting was rural, and consists of two or more houses in a courtyard configuration set around an external patio in the centre of the family *milpa*. The majority of houses in this group have ancillary structures such as sweat-baths, ovens and animal pens, while the Kekchi' house had an internal facility for keeping fowl. The configuration of the Lowlands Kekchi' compound differs to the other K'iche'an houses documented, being two one-room houses arranged in a linear alignment that formed a roofed entry/atrium space versus the common perpendicular configuration with entry gained by first passing through a courtyard space. The Achi' and Kekchi' houses were single dwellings on a site, comprising sleeping, living and cooking quarters in the one house.

One of the most commonly observed socio-spatial patterns inside K'iche'an houses was the location and composition of the hearth. Of note was the predominance of three stones in all nine houses,

which according to local informants had specific metaphysical associations, and served to divide the house into gender specific areas. The hearth was distinctly associated with the female occupants of the houses documented (Chapter 6 discusses this in greater detail) with three of the nine K'iche'an houses (Pokomchi', Achi', Midlands and Lowlands Kekchi') maintaining table-mounted hearths while the remainder kept floor-based hearths. Generally, the central interior area of the house was vacant with furniture peripherally located against the walls of the dwelling. There were no internal dividing walls among any of the houses surveyed in this group, and the construction method of each house was similar among all groups with the location of the four main posts, typically set in the four corners of the home and used to establish either the square or rectangular floor plan. According to informants, there were master builders in most communities who assisted the communal house construction process; however, their role was one of guidance only as all members of the family know the rules for the architectural configuration. Informants reported that these rules were linked the physical configuration of the house to a specific religious schema (see Chapter 6), with the act of communal labour a way of expressing one's participation in the belief system. Further research would yield better results in locating more K'iche'an houses with primary focus being placed on the hipped rectangular Tz'utujil house and the K'ichee' house presented in the archival photographs.

Q'anjob'alan-Chujean House Architectures

Consisting of the Popb'al Ti', Akatek, Q'anjob'al, Chuj and Tojolob'al languages, the Q'anjob'alan-Chujean family resides in the Cuchumatán Highlands of north-western Guatemala, bordering southern Chiapas, Mexico. All but the Akatek traditional homelands lie across the Guatemalan/ Chiapas border, and at the time of writing, the Summer Institute of Linguistics listed the population of Popb'al Ti'-speaking Maya as 100,000; Akatek as 48,500; Q'anjob'al as 90,000; Chuj as 50,000; and Tojolob'al as 36,000. Of these five remaining language groups, the author was unable to locate physical examples of Chuj and Tojolob'al houses. In addition, there was limited archival and historical information available on the house architectures of these two language groups. However, the survey was successful in locating Popb'al Ti', Akatek, and Q'anjob'al traditional dwellings with limited historical information available on house forms for the Popti' and Q'anjob'al and none for Akatek. According to the American ethnographer Charles Wagley, Q'anjobalan was spoken in the central part of the Cuchumatán highlands in San Juan Ixcoy, San Pedro Saloma, Santa Eulalia, San Miguel Acatán, San Rafael Independencía, San Marcos Huehuetenango and San Andres Huehuetenango.[21] It is interesting that Wagley includes San Miguel Acatán, which was actually the location of the Akatek group and house documented as part of this thesis investigation (Figure E3.2).

Due to fieldwork limitations, the researcher could only draw conclusions for the Q'anjob'alan-Chujean family based on Popti', Akatek, and Q'anjob'al houses observed. In *The Handbook of Middle American Indians* Vogt explains that the Chuj were the earliest in 200 B.C. to migrate away

Q'anjob'al

Akatek

Popti'

FIGURE 5.11: The three Q'anjob'alan-Chujean houses documented during the regional survey. All are located in Guatemala. Photo: Davidson (2001 & 2002).

from the proto-community with the Q'anjob'al following 300 years later in 100 A.D.[22] The following description of physical properties of Q'anjob'alan-Chujean houses should be read in conjunction with Appendix E of this thesis.

Language Group Comparison

The Q'anjob'alan-Chujean family contained three of the 27 recorded houses and exhibited the most similarity among family-related house architectures of all linguistic families. In spite of their Highlands location, the Popti' lived in deep valley areas, which produced a Midlands climate and environment, while Akatek and Q'anjob'al houses displayed heavy set adobe wall construction. Additionally, Akatek and Q'anjob'al houses also displayed marked similarities, which pointed to a shared cultural history, climate and material resources. Due to the similarity of morphology between Akatek and Q'anjob'al houses one could hypothesise a late cultural split between the two groups, possibly sometime after 100 A.D.. Certainly, there were differences between them, in particular the scale of the Q'anjob'al dwelling, which was much larger in height, width and length than the Akatek. The Q'anjob'al house was the largest of the three houses with an overall ridge height of 5.5 metres and a plan dimension of 4 metres in width and 8 in length. Both Akatek and Popti' houses were smaller at 4.5 metres in height and 4 metres in width and 6 metres in length. All three houses were rectangular in plan, while the Akatek and Q'anjob'al houses maintained an external colonnaded veranda, which the Popti' house lacked. All the houses in the survey were symmetrical in plan and elevation with all three having only one door serving as both entrance and exit.

Roof Properties

Having a similar architectural morphology, the Akatek and Q'anjob'al houses utilised the roof cavity as dedicated storage and drying space for agricultural produce while the Popti' house made use of ancillary storage structures external to the house. The Popti' house had no windows whereas the Akatek and Q'anjob'al houses had two windows inlaid in the thick adobe walls. All three houses used grass (*paja* or *pajon*) as thatching material and all had hipped roofs.

Wall Properties

In addition, the Q'anjob'alan-Chujean family of houses exhibited varying wall constructions with adobe block construction (Akatek and Q'anjob'al) taking precedence over the *bahareke*-style timber panel construction of the Popti' house. The construction method of the Akatek and Q'anjob'al houses differed significantly to the Popti' with the all-important four corners of the house setting out the corners of the adobe walls, whereas the four main posts in the Popti' house established the rectangular floor plan and sub-frame structure for the timber panel walls. Photographic archival evidence (Figure E4.14) of the Q'anjob'al community of Santa Eulalia in the early 1900s shows the predominance

of the Q'anjob'al house during that era. Such was the extent of architectural transformation in the community, the current author was able to locate only one house on visiting Santa Eulalia in 2002.

Domiciliary Patterns & Socio-spatial Behaviours

Among the households in this selection, the common settlement pattern was in a rural setting where the family compound of a single house set adjacent an external patio space circumscribed the family *milpa*. All three houses in this group comprised single-roomed dwellings containing all functions. If there was more than one house on the site, the courtyard served to separate extended kin relationships rather than separating functions as commonly seen in Yukatek houses. The houses in this group had ancillary structures such as sweat-baths, ovens and animal pens adjacent to the main dwelling and contained within the family compound. Again, the most commonly observed socio-spatial pattern inside the house was the location and composition of the hearth with all three Q'anjob'alan-Chujean houses containing a three-stone hearth; the Popti' and Q'anjob'al utilised a floor-based setting. The location of the hearth divided the house into gender specific areas and was distinctly feminine in association. Generally, the central interior area of the house was left vacant, and there were no internal dividing walls among any of the houses surveyed in this group. House construction was again a family affair with the rules for the structural configuration known by all. Local informants reported during fieldwork that the houses presented in this survey were close to being the last of their kind. It is quite possible that Chuj and Tojolob'al houses remain in the more remote locations of the region; further research is required to rule this out.

Regional Survey Findings: Pan-Maya

Building on the previous discussion, which analysed individual house architectures at a semi-regional (linguistic branch/family) level, the discussion presented below relates those intra-linguistic commonalities and diversities seen above to house architectures on a pan-Maya level. Discussion focuses on settlement and domiciliary patterning, physical house form, socio-spatial activities, communal involvement in the construction process, and house types at the time of Spanish invasion.

Settlement & Domiciliary Patterning

Although each language group has been presented as architecturally distinct, reflecting the geographic and climatic variation, there were a number of commonalities in settlement and domiciliary patterns present across all Maya groups. Of the 27 houses documented during the regional survey, six (Tz'utujil, Yukatek, Itza', Tzeltal and Q'anjob'al) were located in urban settings and the remainder were found in small rural villages (*aldeas*) usually some distance from a larger town, which served as the region's head municipal and religious centre. Considering there was no actual detailed map of indigenous linguistic distribution in Guatemala, the author located the various Maya language groups through recognising the custom of naming a large town after the language group of that particular

region. For example, locating a small group such as the Sipakapense with a population of only 8,000 became easier when one could locate 'Sipakapa', the administrative head town in the region. Other examples were the town of Aquacatán for the Awakatek group, Sakapulas for the Sakapultek, Jacaltenango for the Jacaltek (also known as Popb'al Ti' or Popti'), Santa Cruz del Quiché for the K'ichee', Uspantán for the Uspantek, Tectitán for the Tektiteko, and Lago Petén Itza' for the Itza'. If the particular house being sought was not in the larger town the author would begin to search among the smaller communities on the outskirts of those larger centres, exploring further out until in most cases he was able to locate the house. Interestingly, this method of naming towns does not occur in Mexico, which made it more difficult to locate particular Indigenous groups in that country.

Of the 27 houses found, eleven (Kekchi', K'ichee', Kaqchikel, Ixil, Mam, Yukatek, Ch'orti' Tzotzil, Akatek, Popb'al Ti') dwellings were located in remote areas accessible only by foot. Most were the last of their kind, with less than three examples seen of each house during the entire fieldwork experience. Typically, these remote households were sited a substantial distance from other family units. Each was located in a cleared setting within the surrounding jungle (Lowlands) or forest (Highlands, Midlands). The author found the remaining eight houses (Pokomchi', Pokomam, Sipakapense, Yukatek, Achi', Yokot'an) in medium-sized communities of no more than 20 houses. By and large, community members in these small townships were related by kinship ties, reflecting pre-Columbian settlement patterns that according to Mayanist literature were dispersed across a regional network, and connected through linguistic affiliation, lineage and kinship systems.[23]

Domiciliary Settings & Socio-spatial Patterns

In general, the configuration of the domiciliary setting was common across all Maya groups, comprising a designated compound that usually includes two or more dwellings and an adjacent courtyard formed by the arrangement of the houses around a central patio. In certain areas there were ancillary buildings for the storage of food and other family items, fruit trees and, if large enough, the family *milpa* (Pokomchi', Kekchi', Ch'orti', Kaqchikel). In other areas, the *milpa* was part of a larger communal landholding on the outskirts of the community (Tz'utujil, Pokomam and Yukatek). Differences in domiciliary settings did occur, yet they were not attributable to climatic variance but rather the size and density of their community. Some household settings in denser, more urban centres with greater populations were smaller, and could not generally support more than one house per lot, and certainly could not support an adjacent *milpa* for family agricultural production. In these cases, families relied on communal *milpas* outside the borders of the urban community. As mentioned in the analysis above, examples of this were the Tz'utujil of Santiago Atitlán, the Itza' of San José, the Tzeltal of Pantelho, and the Mam of San Martín Sacatepéquez.

One of the most dominant physical attributes among the domiciliary settings surveyed was the configuration of one or more houses around a courtyard. Twenty-three of the 27 household settings documented in the research displayed more than one dwelling per compound arranged around an adjacent courtyard. Only the Yokot'an, Tzotzil and Tektitek households had less than two houses. In these cases the houses served multiple functions, supporting a number of social activities, including cooking, sleeping and working. In the majority of cases, the courtyard configuration represented kinship patterns with extended family members building in close proximity to older kin. In certain areas, the structures around the internal courtyard were activity-specific, being used as separate cooking, sleeping and living areas (Yukatek and Itza'). However, in most areas (Pokomchi', Kekchi', Ch'orti'), cooking, sleeping and living areas were contained within the one dwelling. In those areas where architectural transformation to Euroamerican house styles was beginning to or had already taken place, households maintained the original courtyard pattern, and transformed the physical materials of the house from thatch and mud to sheet metal and concrete block. Typically, Maya traditional household settings were discrete social units. Settlement patterns varied but the location of dwelling units usually expressed kinship ties with extended families living in close proximity to each other. The house was most often a one-room dwelling and the majority of Maya household settings exhibited more than one house per lot, which reflected the growth in household numbers. At its greatest density, the maximum number of houses observed on one site was three structures in the Ch'orti' Maya community of Tunuco Abajo, Guatemala (see Figure 5.16).

Physical House Form: Environmental & Structural Significances

There were a number of common environmental and structural significances present in the physical forms of Maya houses. Significantly, the impressive considerations inherent in these particular built forms indicated a longevity of adaptation to locally available materials and climate. Of particular note were the different construction types found between the three geographic (climatic) zones with Highlands housing relying on heavy-set construction for the cold, dry climate; Lowlands housing utilising relatively light-weight construction for the hot, humid climate; and Midlands housing exhibiting a transitional typology that sat between heavy-set and light-weight construction. All house construction materials were generally found within walking distance of the household setting, and were very much climate dependent. For example, the *paja* and *pajon* grass used for thatching in the Highlands was not found in the Lowlands, likewise the *guano* and *sacate* palm thatch were only found in the Lowlands. Midlands houses were the only houses seen to take advantage of both grass, palm and at times, maize or sugarcane thatch.

The use of the *vara* (Spanish word for measuring instrument) to determine set-out dimensions for the house was another commonly described pan-Maya trait. In some areas, the *vara* had different names; however, due to the author's lack of understanding of the many Maya languages, the term was used

throughout the investigation to communicate 'the instrument used to measure and set out the house plan and structure'. The subjectivity of the *vara* unit was interesting as its dimension was typically the length of the opposite shoulder to the fingertip of an outstretched arm of the owner-builder, resulting in the physical form of each house reflecting the physiology of its particular owner and builder, further reinforcing the anthropomorphic connection between the house and the owner.

The Value of Thatch

Intriguingly, the various uses of thatch materials in different regions played a significant role in the structural design of the roof of each house as different materials required different methods of construction. Lighter-weight materials such as sugarcane, maize stalk and *guano* palm required a steeper roof pitch and greater numbers of roof battens for support, as was the case for the Kekchi', Pokomchi', Achi', Yukatek and Itza' houses. As heavier-set Highlands houses utilised grass thatch bundled together they were able to span greater distances, thus requiring less internal supports and facilitating shallower roof pitches, as evident in Tz'utujil, Sipakapense, K'ichee', and Kaqchikel houses. These supporting mechanisms for roof thatch had a direct impact on the architectural forms in each region.

Fieldwork analysis discovered other important advantages to thatch material, such as the ability of grass and palm to expand when wet and contract when dry, which was beneficial during both wet and dry seasons as the thatch provided a water resistant cover when wet and better ventilation when dry. This quality was not only extremely valuable to the occupants but assisted in those houses that stored and dried produce in the roof space of the dwelling, as the act of thatch expanding and contracting served to better protect the produce and improve its longevity. This was particularly apparent in Midlands houses (Pokomchi', Achi' and Kekchi') where there was a greater annual variance in climate and thus precipitation. A Pokomchi' informant explained that maize and beans would last up to 18 months stored in the roof of his thatched house before it decayed, versus five months under a sheet metal roof, which did not have the ability to 'breathe' as it was too hot in summer and too cold in winter (Figure 5.13). As a rule, the Lowlands Maya store produce in ancillary buildings adjacent to the main dwelling houses, where likewise good ventilation increases the food's longevity.

During the course of fieldwork, the author noticed an interesting planting regime associated with thatch material. Normally most thatch, whether it was palm, grass or another material, was grown either in the family *milpa* adjacent to the house (the Lowlands and Midlands) or in the communal *milpa* a small distance from the community, as in the Highlands. The advantage of this form of production related to the length of time it took the thatch to decay. Once in place on the roof, the duration of the thatch roughly matched amount the time it took for either the palm tree or grass stalks to grow. Furthermore, the effect of soot from the open fireplace on the interior of the house served

FIGURE 5.12: The K'ichee' domiciliary setting (top) from Media Luna in the northern central Guatemalan Highlands. Note the earth oven in the foreground, and the patio for drying produce in front of the main dwelling. Maize is also hung under the eaves for drying (above left), or internally within the roof space of the house as in the Sipakapense house (above right). Photographer: Davidson (2002).

FIGURE 5.13: The Pokomchi' domiciliary setting (above left) from Las Pacayas in the central Guatemalan Midlands. The family *milpa* surrounds the house where produce, including maize, beans, and squash, is grown for the family is grown. Photographer: Davidson (2001).

to protect the thatch and lengthen its lifespan (Figure 5.15). For example, in the Ch'orti community of Tunuco Abajo, palm thatch lasted approximately twelve years before it needed to be replaced (Figure 5.16). The palm, planted adjacent to the house, took the same time to mature before it could be harvested for thatch. The *guano* palm thatch used in Yukatek houses in the Lowlands had the longest lifespan, being used for up to 20 years before it required replacing, while the maize husk and sugarcane leaf used in Kekchi' houses in Alta Verapaz had a much shorter lifespan of only two to three years. Grass thatch required the most maintenance of the heavier thatch materials, and lasted between 12 and 15 years before needing to be replaced. The grass thatch on the Kaqchikel house in the images (see Figure 5.7) had not been replaced for more than 20 years and was in a significant state of great disrepair. In this particular example, the owners were elderly and had no intention of maintaining thatch at their age. Their children no longer believed that it was necessary to keep the traditional house; therefore the decision had been made to allow the house to decay around them.

One of the common criticisms of the usage of thatch had been its lack of resistance to pest infestation. Abrams in *How the Maya Built Their World* posits that thatched roofs, firewood and earth floors harbour disease-bearing pests detrimental to residents' health.[24] According to Abrams' evidence, earth floors foster parasites such as ringworms, while firewood and thatch gives protection to assassin bugs bearing the protozoan Chagas' disease.[25] Local informants reported during fieldwork that this kind of information was used to encourage people to give up their houses. Concurrently, fieldwork interviews established that traditional methods used to counteract vermin and pest infestation in thatch were well-considered and widely used, and involved the throwing of handfuls of raw chillies into the central hearth, which served to fumigate spiders and insects.

The Value of Cutting Timbers on the Full Moon

One of the most common findings across all language groups and regions was the tradition of cutting of the main structural timbers for the house on the full moon. As explained by informants, there were two physical reasons for cutting timbers on the full moon. The first related to producing stronger timbers for house construction while the second was that such a timely harvest resulted in timbers that resisted pest infestation and decay. It was explained that this added strength, longevity and resistance was due to the liquid/water, usually stored in the tree roots, being drawn up into the trunk and branches during the time of the full moon. After cutting, the timbers were left to season (dry), resulting in less cracking and splitting later. The seasoning process took longer if there was more internal moisture content in the timber but eventually produced more durable structural posts; Wauchope found the same custom in the 1930s.[26]

Regarding the foundation systems for the houses in all regions, the common method was to place a large flat stone at the base of the footing and erect the timber structural posts straight on to it and

FIGURE 5.14: (above right) the roof space in the Pokomchi' house. The combination of thatch and good ventilation gave maximum longevity to storing produce such as maize, beans and squash grown in the family *milpa*. Photographer: Davidson (2001). (top left) a Kaqchikel man harvesting *paja* and then lashing it in place (bottom left). Date: 1951; Photographer: Richard Adams; Source: Centro de Investigaciones Regionales de Mesoamérica, Antigua, Guatemala.

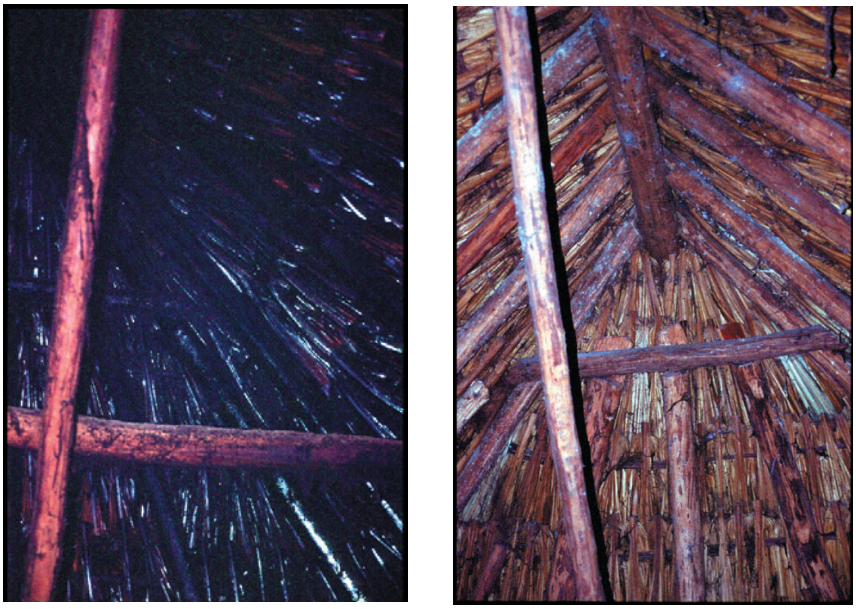


FIGURE 5.15: Soot serves to improve the longevity of thatch. Photographer: Davidson (2001).

then fill in the hole with smaller rocks and soil. In Australia it is not typical to place timber directly into contact with soil as it increases the chances of decay and pest infestation. However, by virtue of its particular process cutting and curing, the timber used in Guatemala, Mexico and Belize was so enduring that it became part of the inheritance system, passed down familial lines throughout the Maya realm. In all, the procurement of housing timber had formed an integral part of Maya identity, as J.M. reported during fieldwork:

> Another element of our identity is how we value nature, however this has also changed, an example of this is that thirty or forty years ago you couldn't cut down trees without performing a ritual. In respect to the house, although you knew it would take forty days to complete you had to wait until the next full moon before you could cut down the tree, because if you didn't the tree would not last very long, it would rot. Therefore, you have to take into account that ceremonies have to be performed before you build the house so that nothing happens to the owners of the house. In the current situation one can build a house tomorrow and start living in it immediately, there is no need to take into account the cultural aspect. This also happens today with deforestation, there is no longer any respect for nature or animals; this is in part due to the influence of other cultures who don't respect nature, other persons or the elderly.[27]

The Value of Earth Construction

Other than thatch and timber, the other locally available building component in Maya houses was earth with casas de paja maintaining earth floors and adobe wall construction occurred in eleven of the 27 surveyed houses. Such use of adobe was not dependent on geographical location as the majority of adobe houses were found in the Highlands of Chiapas and Guatemala and occasionally observed in the Lowlands. The value of earthen floors related to their compact surface that yielded a relatively porous yet hygienic finish. Earth floors were also thermally reactive, being cooler in summer and warmer in winter when compared to other floor materials such as concrete and timber. Furthermore, these advantageous insulative properties were observed in Highlands adobe wall construction where the lag effects of direct solar gain on the heavy-set earth partitions warmed the interiors during the cold winter months. The practice of adobe construction in the Lowlands region seems counter-intuitive, yet the effects of shading thermal mass, usually by planting trees and other shrubs close to the house effectively cooled interiors during the hot and humid summer months of this area.

The Structural Integrity of Lashing Timbers

Another major advantage in the construction method of Maya houses was their ability to resist tremors and earthquakes, which were a common occurrence in this seismically unstable region (see Figures 5.18 and 5.19). Such structural integrity resulted from the common method of lashing timbers together with *vejuco* rope to create a series of flexible joints within the house rather than the rigid constructions seen in many other adobe forms of construction around the world. This lashing method was present in roof and wall construction in all the houses surveyed with its most effective use seen in the wattle-and-daub constructions of the Achi', Kaqchikel, Mam, Yukatek, Itza', Tzotzil, and Tzeltal

FIGURE 5.16: The Ch'orti' house from the community ofTunuco Abajo, eastern Guatemala, bordering Honduras. The Ch'orti' domiciliary setting exhibited the most number of houses per family compound seen during the regional survey with commonly three houses per family group (top). Note the palm used for thatching is grown on the family *milpa* adjacent to the house. The palm tree itself takes twelve years to reach maturity, before it can be harvested for roof and wall material.This form of thatch lasts approximately twelve years before it needs to be replaced. Photographer: Davidson (2001).

houses where a timber cage substructure was filled in with earth and overlaid with plaster. A number of informants reported that traditional houses did not fall during seismic events but simply shifted on their foundations.

Socio-spatial Activities in the Use of Domiciliary Space

As discussed previously, there was generally a great similarity in the configuration of domiciliary space (courtyards and compounds) among the Maya households surveyed. There were however two conspicuous differences. Firstly, there were variations between sizes of urban and rural locations, accounted for by the divergences in the amount of available land required to establish a compound in these settings. Secondly, there was a disparity between the maintenance of two or three activity-specific dwellings as employed by the Yukatek and Itza' versus a single multi-functional dwelling among the remaining Maya groups. This practice was not location dependant as the majority of Maya households in all regions arranged a single or multi-functional dwelling around a central courtyard, which in turn had ramifications regarding the use of space associated with varying spatial configurations. For example, the division of gendered spatial behaviours in the interior spaces of Tzotzil and Ch'orti' multi-functional dwellings was more subtle than in the activity-specific dwellings of the Yukatek and Itza', where the houses themselves were the division. Generally, the internal arrangement of multi-functional houses reported to the division of sexes whereby men and women utilised different areas of the dwelling's interior for particular activities. Usually, the location of the interior hearth was the woman's area in the house (see Figure 5.17); Vogt illustrates such divisional association when describing a Tzotzil household in Zinacantan, Chiapas, Mexico: "The fire…is located on the floor, normally toward the setting-sun side of the house, the domain of the women. The men's domain, which is toward the rising sun, is where they kept their belongings and sometimes set up an altar containing images or pictures of saints."[28]

Once inside the multi-functional *casas de paja*, the most commonly observable social activities included cooking, sleeping, living, food production (at times utilising the front porch if there was one), worship (usually involving a small altar in clear view from the front door) (Figure 5.20), storage of goods, and the drying of crops (typically achieved in the roof cavity). Areas for bathing, washing clothes, baking and agricultural production were typically found in the exterior areas of the family compound. Another interesting outcome of the regional survey was the correlation between the current author's photograph of the interior of the Pokomchi' house and the sketch of a very similar interior in 1934 by Wauchope (see Figure 5.21). Although taken 70 years apart, when seen together, these two images provide a powerful example of the maintenance of socio-spatial behaviours, and illustrate almost identical furniture layouts and material construction and arrangement.

FIGURE 5.17: The interior of the Tz'utujil house. The locations of the three-stone hearth, metate for grinding maize, and other furniture items evidence the occupants' socio-spatial behaviours. Photographer: Davidson (2002).

FIGURE 5.18: The lashing of house timbers produces a non-rigid structure, important in earthquake-prone areas like Guatemala and Mexico. Photographer: Davidson (2001).

FIGURE 5.19: An image of the 1917 Guatemalan earthquake; note the lateral movement of the structural frame. Source: Centro de Investigaciones Regionales de Mesoamérica.

FIGURE 5.20: An altar in a Kekchi' house in the Verapaz region of central Guatemala. Note the syncretism in religious paraphenalia: the maize offering, and the image of the Catholic Virgin Mary. Photographer: Davidson (2002).

Communal Involvement in House Construction

The involvement of extended family, and other community members in house construction was a common pan-Maya occurrence. Informants reported that communal participation in the building process (see Figure 5.22) was an important aspect in the renewal of Maya cultural tradition as it aimed to build relationships among community members and impart knowledge to younger participants. Community members also d in the maintenance regime of older houses, where personal 'renewal' paralleled house 'renewal' through yearly maintenance activities. Such was the shared knowledge between community members that once during the interview process, the author witnessed a husband and wife disputing the construction process; it appeared that she knew as much, if not more than he did about building a house, despite house construction being a male domain. The following account of house construction was given by E.S., a highly respected Kaqchikel linguist from the community of Chimaltenango in central Guatemala, and at the time of fieldwork director of Guatemala's first Maya-run publishing house:

> There are certain ceremonies we use to 'pay' for the construction of the traditional house, the sharing of food, the various candles put in the place where the house is to be built, permission needs to be asked of the earth to build the house. In building a house, the first thing one must do is speak to one's parents and grandparents, they take a principal role in deciding where the new house is to be built. This depends as sometimes the father is responsible and at other times the grandfather. This is the correct way as it's not just the decision of one person, it's more than just finding land, it's also the opinion of the old people, the level of the father, the level of the grandfather and the level of the parents-in-law, it's a group decision. When one begins construction one must advise one's neighbours and say, "we have the idea to build a house, we wish to ask for your permission to build, not tomorrow but in two weeks". You must give them time to plan, as well as enough time for yourself to make the necessary arrangements.
>
> The first stage involves the initial idea, picking the date which is not too soon so that everyone can prepare in order to participate. The men participate in the ceremonies and the construction itself, while the women participate in the ceremonies and prepare the food to be eaten by those working on the house. This unites the community as a social activity where the majority participate. It's an opportunity whereby men and women can share knowledge, ways of life and socialize, it's not just building and there isn't just one person building the house. Therefore, the construction of the traditional house involves more than just the building process, it's an opportunity to socialize, exchange ideas and knowledge, it's an opportunity for enjoyment while the house is being built. Generally, the eldest person is the one who influences the Maya ceremony the most. I'm speaking of the area I know, the Kaqchikel.
>
> If there is still a presence of the traditional Maya religion in the area, the Maya shaman, or priest will direct the ceremony. However, if the family is Catholic the ceremony is quite different. The participants pray and place candles in the four corners of the house, I haven't seen this recently however. Twenty years ago I saw a Catholic ceremony where they sacrificed a chicken and placed the blood in the four corners of the house so as to ask the earth for permission to build. We are still talking about a Catholic family; therefore, we can still see the Maya religion within the Catholic ceremony. These ceremonies are done before construction

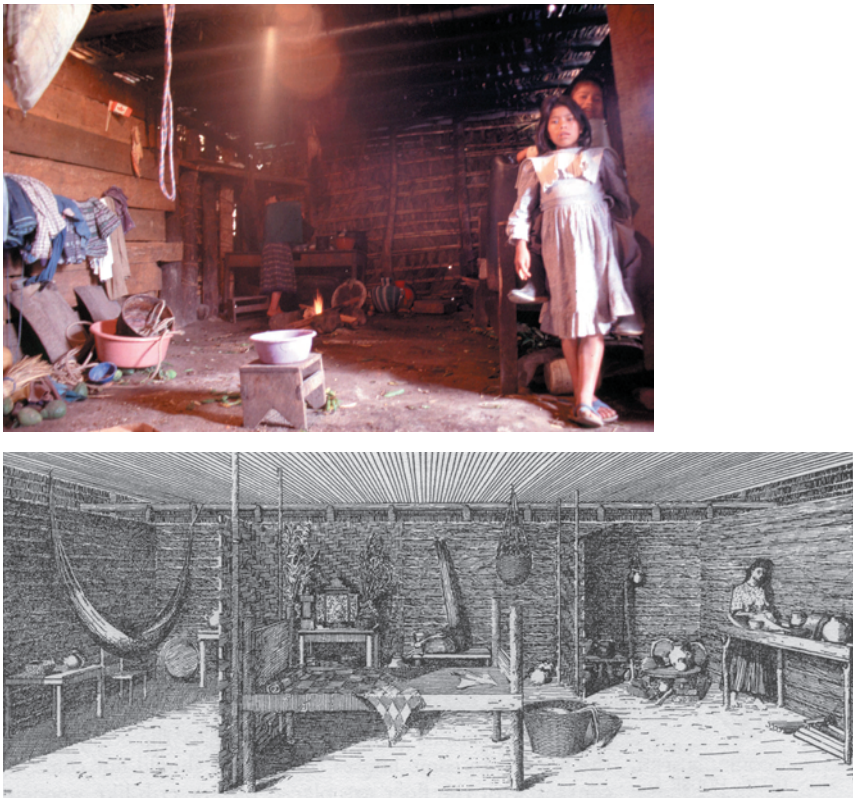


FIGURE 5.21: The interior of the Pokomchi' house (top) as photographed by the author in 2002, and an etching by Robert Wauchope of a very similar scene in 1934. There is a definitive maintenance of socio-spatial behaviours in the 70 years between images; note the similar furniture layout and construction methods in the two houses. Source: Wauchope, p.123 (1938).

FIGURE 5.22: Communal involvement in house construction. In this image, community members assist in the construction of a new Tzotzil house. Date: Unknown. Photographer: Unknown. Source: Instituto Nacional Indigenista, Mexico City.

> begins. After this the men begin to build the house, the women prepare lunch, it's more than a simple construction. If the Maya calendar, *El Chol'zij*, is still in use in that area, people follow the proper days for the construction process. Generally the best day to begin construction is the day of *Aj*, the day of corn.

> The first thing to ask is what religion people are, and how they would like their ceremony. Those that decide are the eldest person in the family. Therefore, although the Maya religion might not be apparent, it is best to ask the eldest person to ask God, in whatever manner they like to protect the house so that it lasts longer and is held in tranquillity. It's interesting from one point of view as to what is the social outcome in that the house is the same, no matter whether the priest is Maya, Catholic or Evangelical. They also independently undertake a ceremony after construction is finished. There is another important aspect of the ceremony once the house is finished. One must thank God in the company of all those who participated in the construction. Everyone reunites, independently of their belief, and thanks God, they smoke the house and put candles in the corners once again, they generally begin during the day. This is how it is done traditionally, however, now not many people follow this process, they use contracted labour to build the house without speaking to the elderly.[29]

In further describing house building in the Mam community of Santiago Chimaltenango in the Guatemalan Highlands, Wagley demonstrates that community participation in household activities also extended to the harvesting of crops:

> The preliminary work of building the walls and the frame for the roof is done by the father and his sons. This group works at the task during their spare time for several months. When they have finished everything about the house except the roofing, they call in all their patrilineal kin, all the compadres (godfathers of their children), and even friends to complete the roof in one day. That night there is a fiesta with coffee, sweet rolls, aguardiente, and dancing to marimba music provided by the patriarch.[30]

Martin Prechtel in *Secrets of the Talking Jaguar* links community participation in the construction process to renewal, rebirth, and death; he states:

> The secret of village togetherness and happiness has always been the generosity of its people, but the secret to that generosity was village inefficiency and decay. The House of the World, like our village huts and our human bodies, no matter how magnificent, is not built to last very long. Because of this, all life must be regularly renewed. To do this, the villagers come together once a year at least, to work on putting back together somebody's hut, talking, laughing, feasting, and helping wherever they can in a gradual, graceful way. This way each family's place in the village is re-established and remembered.[31]

House Types at the Time of Early Invasion by the Spanish

It was impossible to know exactly how many Maya house types existed at the time of Spanish invasion in the 16th Century. However, based on the findings of this thesis, it is possible to offer an approximation. Taking into account the available knowledge of linguistic groupings, geographical distribution, climatic variance and historical evidence contributed by Wauchope, Wilk, Blom, Vogt

and the current investigation, the author estimates that at the time of first contact with the Spanish, there were at least 45 different house types in the Maya tradition. According to current geographical distribution most of the larger language families, such as the Kaqchikel, K'ichee', Mam, Kekchi', and Yukatek would have had at least two, if not three, distinct houses in their architectural tradition, each associated with individual dialects or language groups. The extent of Spanish influence on Maya house traditions was difficult to analyse. In comparing the physical form, current numbers and geographical distribution of the houses surveyed to the archaeological record of pre-Columbian house traditions, the author contends that Spanish influence had been negligible in the transformation of Maya house traditions over the last 500 years.

Conclusions

In summation, this chapter has shown that traditional Maya house architecture was distinctly language-specific. While a number of houses shared similarities, only the Yukatek (apsidal *pakluum*) and Itza' had the same house form. Furthermore, the chapter demonstrated that house architecture was geographically distinct with three different climatic settings, termed the Highlands, Midlands and Lowlands, which provided the basis for an analysis of the physical properties and categorisation of house form. In terms of the overall empirical investigation, the chapter furnished evidence that language/cultural grouping was the best method to begin categorising house architecture, followed by geography as a subcategory in further breaking down regional variants of the physical forms. While house shape, scale and proportion differentiate linguistic variation, the usage of physical materials, themselves responding to climate and resource availability, delineate geographic location. In comparing the findings of the current survey to *The Atlas of Vernacular Architecture of the World*, the chapter established that the Maya were one of the only indigenous groups in the world where house form was distinctly language specific.

In addition, the chapter illustrated that while house architecture was generally distinct between language groups, there were similarities within linguistic family branches providing physical evidence of shared cultural histories and traditions, which at times were hundreds of years old (for example, the Tzotzil and Tzeltal). The comparative analysis of linguistic family branches demonstrated an observable relationship between house architectural form and linguistic evidence regarding historical migration patterns away from the original proto-Maya community. For example, the Kekchi', Pokomchi' and Achi' houses shared a similarity of physical form due to their being part of the original Kekchi' family that split from the proto-Maya community sometime after 400 B.C. After a 1300 year shared cultural tradition and geographical location, this original Kekchi' group then divided into Pokomchi' (and later Achi') and Pokomam in approximately 900 A.D. However, Pokomchi' and Achi' houses were more similar than the Pokomchi' and Kekchi' or the Achi' and Kekchi', illustrating a more recent shared cultural history. From the supporting migration and linguistic evidence, it could be

conjectured that the difference in Pokomam and Pokomchi' house form related to the separation of these groups some 1100 years ago with the Pokomam migrating some distance to the south from the Pokomchi' homeland. Thus, their arrival to a new climatic region resulted in the use of different physical materials, and therefore novel technical responses in designing the house. This correlation between linguistic relationships, migration and house form can be seen in other Maya groups that shared cultural histories.

By extension, correlation in house form was stronger in those groups that had separated in more recent history. For example, when viewed in conjunction with linguistic evidence, ethnohistorical accounts illustrate that the Itza' migrated to their current location in El Petén from Yucatán in approximately 1450 A.D., just 50 years prior to Spanish invasion. It could be contended that Spanish invasion stifled the design evolution and creation of a new Itza' house form during the subsequent 550 years of occupation, thus the reason for the Itza' maintaining what was effectively a Yukatek house form to the present day.

Additionally, the chapter has shown that even with 500 years of external influence, Maya communities continued to maintain pre-Columbian settlement patterns and domiciliary settings, with the system of core administrative and religious centres surrounded by small, dispersed satellite communities, which provided evidence that individual courtyard configurations were still the predominant settlement form in the region. The chapter also established the symbiotic relationship between the house form and the physical materials utilised in its construction; for example, thatch production and house maintenance regimes, the cutting and preparation of house timbers, and the inheritance system of passing the most important structural members for house construction from grandparent to grandchild. Other significant physical and social manifestations of house form included the structural integrity of lashed timbers and earth construction in earthquake-resistant design, and the communal involvement in house construction and maintenance regimes as linked to personal renewal.

Future research into the architectural analysis of house form, in conjunction with linguistic evaluation, ethnohistorical accounts and archaeological investigation, would provide a more indepth understanding of Maya history, architecture, and the various migrations and subsequent separations from the proto-Maya community. The current comparative analysis of house form requires more detailed investigation in order to reach a more complete understanding of the material significances of Maya house architectures. The observations above were not predicted when the research began and illustrate the importance of investigating house architectures from a regional and pan-Maya perspective. Moreover, this regional approach to comparatively analysing the physical attributes of Maya traditional houses has led to an important finding regarding the metaphysical associations between house architecture and traditional pan-Maya socio-religious belief systems – the subject of the next chapter.

Endnotes

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[2] F. Starr, *Indians of Southern Mexico: An Ethnographic Album* (Chicago: University of Chicago Press, 1899).
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[4] R. Wilk, "Little House in the Jungle: The Causes of Variation in House Size among Modern Kekchi Maya," *Journal of Anthropological Archaeology* 2 (1983): 99-116.
[5] Charles Wagley, "The Maya of Northwestern Guatemala," in *Handbook of Middle American Indians*, ed. R. Wauchope (Austin: University of Texas Press, 1970), 54-6.
[6] Ibid., 56-67.
[7] E.Z. Vogt, "The Maya: Introduction," in *The Handbook of Middle American Indians*, ed. R. Wauchope and E.Z. Vogt (Austin: University of Texas Press, 1970), 24.
[8] Ibid., 25.
[9] C.A. Hofling, "Indigenous Linguistic Revitalization and Outsider Interaction: The Itzaj Maya Case," *Human Organization* 55, no. 1 (1996).
[10] Peter Matthews, February 2006, Personal Communication.
[11] Hofling (1996) estimated that the Itza' may have even settled in the Petén as far back as 1200 A.D.
[12] Hofling, "Indigenous Linguistic Revitalization and Outsider Interaction: The Itzaj Maya Case," 109.
[13] Vogt, "The Maya: Introduction," 25.
[14] Ibid.
[15] D. Law, J. Robertson, and S.D. Houston, "Split Ergativity in the History of the Ch'olan Branch of the Mayan Language Family," *International Journal of American Linguistics* 72, no. 4 (2006).
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[18] Population Demographics and Language Classification information for Guatemala and Mexico taken from the Summer Institute of Linguistics website: http://www.ethnologue.com/show_country.asp?name=GT and www.ethnologue.com/show_country.asp?name=MX respectively. Accessed 27 December 2007.
[19] The reason for using SIL demographic figures throughout this chapter is due to SIL's relative accuracy, compared to official Government sources, in representing Indigenous population figures.
[20] Vogt, "The Maya: Introduction," 26.
[21] Wagley, "The Maya of Northwestern Guatemala," 46.
[22] Vogt, "The Maya: Introduction," 26.
[23] See Fox, Cook, Demarest etc. J.W. Fox, G.W. Cook, and A.A. Demarest, "Constructing Maya Communities: Ethnography for Archaeology," *Current Anthropology* 37, no. 5 (1996).
[24] E.M. Abrams, *How the Maya Built Their World: Energetics and Ancient Architecture* (Austin: University of Texas Press, 1994), 34.
[25] Ibid.
[26] Wauchope, *Modern Maya Houses: A Study of Their Archaeological Significance*, 140.
[27] J.A.M.M., Personal Communication, ALMG, 08.07.02
[28] E.Z. Vogt, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals* (Cambridge: Harvard University Press, 1976), 295.
[29] E.S., pers. comm. 08.07.02.
[30] C. Wagley, "The Social and Religious Life of a Guatemalan Village," *American Anthropologist* 51, no. 4 (1949): 15-6.
[31] M. Prechtel, *Secrets of the Talking Jaguar: Unlocking the Mysterious World of the Living Maya* (Boston: Element, 1998), 279.

VI
Pan-Maya Comparisons: Semantic Significances

In the previous chapter, the author established those architectural traits and associated socio-spatial patterns commonly observed among the Maya houses surveyed. As the research progressed, further analysis led to the realisation that these architectural manifestations and their related social behaviours had an affiliation to a belief system, which on the surface appeared to be a pan-Maya phenomenon. Although *casas de paja* differed according to language and location, these semantic associations cross the cultural and geographical divide, and encompass environmental, spiritual, political and behavioural significances of the built form. This chapter presents the initial, albeit limited, findings regarding a pan-Maya belief and its influence over the physical configuration of Maya house architectures. The discussion is divided into four parts; the first, 'Raising the Sky-Roof', draws together the outcomes of interviews on Maya house semantics collected during fieldwork, supported with information from authoritative literary sources; the second, 'The Maya Creation Event, outlines the thinking (at the time of writing) among Mayanists regarding the cosmovision of the ancient Maya; the third, 'Lifecycle of the Maya House', discusses how traditional Maya houses continue to reflect this Maya worldview; while the fourth, 'Meaning in Architecture', presents a discussion of the role of architectural communication in conveying meanings in the dwellings surveyed.

Raising-the-Sky-Roof: Pan-Maya Cosmologies & House Architectures

At first glance, the Maya house (called *Na, Sna, Otot* in a number of Maya languages) appears to be a simple response to climate, the availability of local materials, and the need for shelter. However, on delving deeper into Maya socio-religious philosophy, the cultural significance of the house begins to unravel. As Wauchope noted in the 1930s, traditional Maya houses were rectilinear and square in plan whereas other Mesoamerican indigenous groups to the north and south maintained circular plan forms.[1] As discussed in Chapter 5, there was a predominance of three-stone hearths and four main structural posts in the majority of Maya houses surveyed, independent of language and geographical location. The posts were commonly described by informants as the most important elements in the structure of the house, and in those areas where timber columns did not exist, in the Highlands for example (Sipakapense, Mam, K'ichee' and Q'anjob'al), were symbolically replaced by the four corners of the adobe walls of the house. On further reflection it appeared that the numeral 'four' was semantically significant and not the physical columns or corners of the house. A number of other observations became evident in the regional survey, for example, the naming of structural elements of the house to reflect the various parts of the human body; house dedication ceremonies involving requests being made of the ancestors so that the physical body of the house was given a soul in a similar manner to its new owner/occupiers; and the metaphorical relationship between the lifecycle of the house and the sacred maize plant, which seeds, sprouts, dies, and then reseeds for the next generation in a similar way to the customary articulation of creation, life and eventual death.

Due to the paucity of remaining Maya *casas de paja* in the study region, it was difficult to obtain concise information from the few sources regarding the overarching semantic associations of the house. The researcher found that if householders in traditional houses had converted to Christianity (Catholic, Evangelical, or Protestant) it was extremely unlikely that they would admit to knowing these associations. When questioned, most would answer that such things were common in the past, but they could no longer remember what these associations signified. Another common response was that these associations had died with their parents and grandparents. It was not until interviewing practicing 'traditionalists' (following traditional religion) that the true semantic significance of the house was garnered. Interestingly, none of the 'traditionalists' interviewed lived in a traditional house, preferring to live in a contemporary house of concrete block and sheet metal roofing. Thus, the following discussion relies on interviews with people who no longer lived in traditional houses but maintained a strong connection with traditional lifeways through education, language and religion.

The Hearts of Heaven and Earth – Four Cardinal Points & Three-Stone Hearths

As discussed in the methodology chapter, interviews regarding the semantic associations of traditional house form were conducted with both academically-educated and non-academically-educated Maya peoples. Interestingly, the academically-educated people appeared to value traditional cultural aspects more so than their non-academically educated countrymen, although they were less likely to be living in a traditional domiciliary setting. Another relevant observation was that the majority of non-academically educated respondents who had remained living in *casas de paja* and who were interviewed during fieldwork, were the most likely to express a desire to change their living environments. The following treatise presents the outcomes of discussions with a number of academics who lived in Guatemala City at the time of fieldwork, as well as a Kaqchikel shaman (B.C.) from Santa María de Jesus, a small community to the south of Antigua in Guatemala, who was studying the North American legal system at the University of San Carlos in Guatemala City. The fact that the shaman worked and studied in both worlds, traditional and non-traditional, resulted in a fruitful exchange and greater understanding of the current field of study. The former Director of the *Academia de Las Lenguas Mayas* (J.M.) himself a Pokomchi' man from San Cristobal Verapaz, was the first informant interviewed by the current author in relation to the underlying symbolism of *casas de paja*. J.M. explained the semantic connection between the beliefs, the physical form of the house and the associated social behaviours as such:

> ...in Maya cosmology, the rectangular plan of the house holds a lot of meaning. The four corners represent the four cardinal points of the earth, the cooking fire signifies the centre point between heaven and earth – everything has a meaning. The triangular association of rocks in the fireplace also has its significance with the stars in heaven. Therefore, all the elements of the house have significance in agreement with Maya cosmology...The location of furniture within the house also has its significance, where the bed is located in a traditional house is significant...These traditions are conserved more in rural communities than in urban communities.[2]

In emphasising the importance of the rectangular floor plan, the four corners of the house representing the cardinal points of the Earth's surface; the three-stone hearth representing specific heavenly bodies; the cooking fire as the *axis mundi* representing the connection between heaven and earth; and the spatial organization of interior furniture of the house (see Figure 6.1), J.M.'s statement shows the fallacy in viewing such houses as simple responses to climatic and physical environmental conditions by ill-informed observers.[3] The fact that most of those who had designed and built these dwellings were no longer alive (at the time of fieldwork) to explain their semantic importance resulted in the author looking for supporting evidence earlier literature. Subsequently, in *The Book of Chilam Balam of Chumayel,* a colonial-era manuscript republished in 1933, Roys shows the importance of the four cardinal points to the Maya at the time:

> The Mayas connected the idea with a system of color symbolism: red with the east, white with the north, black with the west and yellow with the south…the gods set up the four trees of Abundance at the cardinal points to commemorate the previous destruction of the world…these trees were surmounted by birds of mythological significance. From the four world-quarters came the winds and here in all probability were the four great jars of water which supplied the rains.[4]

Over 400 years earlier, in 1566, De Landa spoke of the significance of the four cardinal points to the Yukatek related to the relationship between the creation of the world and the broader universe, stating that: "among the multitude of gods worshipped by these people, they adored four, each of whom was called *Bacab*. These they said were four brothers whom God, when he created the world, placed at its four quarters to hold up the sky, so that it should not fall."[5] In his article, "In the World of the Sun", Watanabe demonstrates that the reference to the cardinal points in pan-Maya cosmovision "allude to the daily journey of the sun" with north being 'go up', south 'go down', east 'enter', and west 'go out'.[6] In *Maya Cosmos*, Schele, Freidel and Parker have underlined this important connection in Maya house dedication rituals, stating: "To move successively to the four main house posts to make offerings and thus through the four directions is often part of Maya house dedication rituals... this meaning has particular relevance to the context of the Creation events."[7] They also point out the similarities in Yukatek and Ch'olan between the terms for 'sky', *ka'an*, and for the number 'four', *kan*, and illustrate the significance of the conglomerate term *Wakah-Kan* which mean 'World Tree'.[8]

In continuing, the *Book of Chilam Balam of Chumayel* states that four gods called *Chaaks* supported the four corners or sides of the sky and controlled the lightning, thunder and rain while another four gods called *Pawahtuns* supported the four cardinal points or Trees of Abundance.[9] The findings of the present study accord with these accounts in that informants claimed that the symbolism of the four main posts (*horcones*) of the Maya house reflected and maintained the relationship between earth-sky. The four posts were literally seen as raising the sky in being supported by four gods. In

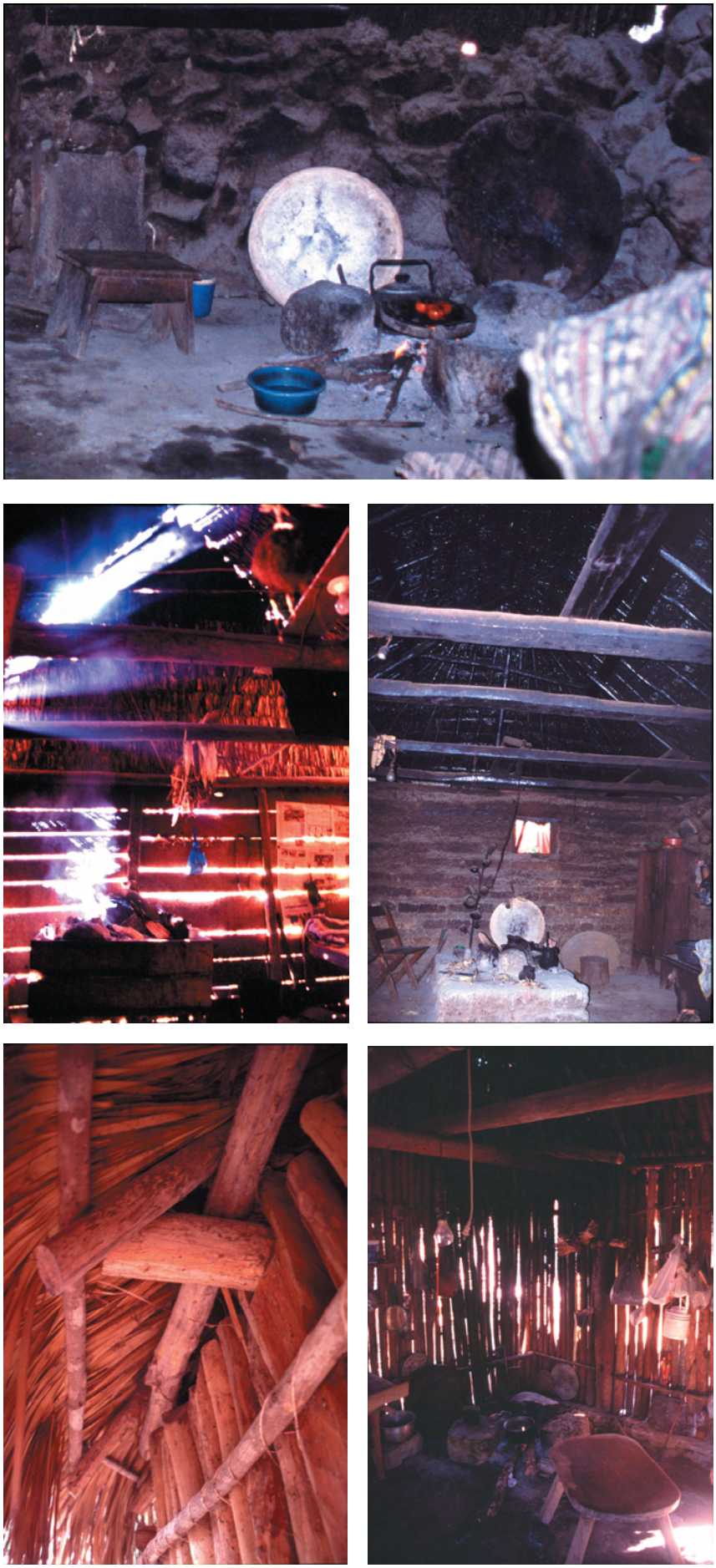


FIGURE 6.1: A variety of examples of three-stone hearths documented during the regional house survey. The top image is the floor mounted hearth in the Tz'utujil house from Santiago Atitlan, Guatemala; the bottom left is the three-stone raised table hearth in the Kekchi' house from Tonten, Alta Verapaz, Guatemala; the bottom centre is the three-stone platform hearth in the Sipakapense house from Tres Cruces, Guatemala; in the bottom right image is the three-stone floor mounted hearth of the Yukatek house in Coba, Mexico; while the bottom left image shows the junction between the main *horcones* (structural posts) and the *vigas* (beams) of the Yukatek house, also from Coba. Photographer: Davidson (2001 & 2002).

his explanation of the Kaqchikel house, B.C. extended the significance of the four corners/posts, and further extended the symbolism of the three-stone hearth:

> The first is the nest; therefore to build something that represents something is more important. This is why the house has four columns...The number four represents the four cardinal points, as well the four colours of the sacred maize, being red, yellow, white, and black. We have the north, south, east, and west. This signifies purity, as well as having the four colours of the Maya people as well, in the Maya world for example, there are four groups of people, white, yellow, red, and black...[The] three stones represent the trinity as we call it – God, Nature, and Man. And where is the fire placed? It is always in the centre of the house like the mother. Therefore, the fire is always to be in the centre of the house.[10]

Interestingly, B.C. did not state that the three stones referred to the heavens, as previously described by other interviewees, preferring to focus on the hearth stones as a physical representation of the relationship binding humankind to the earth and the universe. Tellingly, B.C.'s identification of the central location of the hearth within the house complemented the common observation in the Maya households surveyed of the hearth as a symbolic area representing the central role of women in family and community social organisation. Supporting this construct, Vogt states: "The fire [in the Tzotzil house]…is located on the floor, normally toward the setting-sun side of the house, the domain of the women."[11] Tedlock's work in the 1990s publication of the *Popol Vuh* sheds further light on the semantic associations of the three-stone hearth to the K'ichee' Maya of Guatemala:

> The continuing decipherment of Mayan hieroglyphic texts is another source of new light for the Popol Vuh, including the astronomical aspects of the story it tells. At times the astronomy is quite explicit, but the narrators often content themselves with allusions whose meaning is left to knowledgeable readers. Such is the case with their account of the cataclysm that ended the world preceding this one, where they mention that hearthstones came shooting out of a kitchen fireplace. Mayan fireplaces have three hearthstones arranged in a triangle, and we know that the contemporary Quiche have a hearthstone constellation consisting of a triangle of three stars in Orion.[12]

In a subsequent interview with the director (L.M.) of *Oxlajuuj Keej Maya' Ajtz'iib (OKMA)*, a Maya linguistic organisation based in Antigua, Guatemala, the researcher was to gain a deeper understanding of the social implications of the location and usage of the three-stone hearth. L.M., himself a Kaqchikel man stated:

> In the houses we have been discussing the fire is located on the floor; this is a very important concept for us because it involves Maya cosmology. The three stones which form part of the fireplace are part of our creation story. The belief is that the stones represent three stars in heaven this can be seen in the triangular formation of the stones. This is the reason we all sit around the fire to eat and we are therefore able to talk, parents and children together...The fire was the centre of the house, if the fire was out the feeling was sad, meanwhile if it was lit, everyone was there talking about things, of our problems, everything.[13]

In moving the discussion from semantics to considerations of social behaviours, L.M. illustrated the importance of 'encircling' the fire as indicative of one's participation on a daily basis in the overall belief system. The house could be seen as a living altar with the hearth as the focal point containing both practical and philosophical associations. In publishing his work with the Tzotzil in the 1960s, Vogt in *Zinacantan: A Maya Community*, confirms L.M.'s perspective, stating: "The hearth, with a fire that almost never dies (except when the members of the household are away for extended periods of time), is a focal point for women's work, as well as for family interaction, since men and children sit by the fire for warmth and also eat near the fire."[14]

Interestingly, in 1934, Wauchope noticed a similar pan-Maya patterning but did not elaborate on its semantic significance, stating that most home activities centred around the hearth, which was always located in one end or corner of the house, and generally consisted of three round stones about 30 centimetres in diameter. He declares that in Guatemala the hearth was occasionally mounted on a table (as in the present day Pokomchi' and Kekchi' or on a bed of rubble covered with clay (the Ch'orti' for example).[15] The phenomenon of three-stone hearths was still widely evident in the majority of houses surveyed by the current author. Of interest, the researcher observed that the differing forms of hearth construction were not regionally-specific with floor-based, raised-platform and table-mounted hearths occurring in all areas of the study region. Wauchope did not mention in his 1930s account whether the raised, rectangular, timber-framed table still contained a three-stone hearth in the manner (as observed by the current author) of the Kekchi' house in the community of Tonten and the Pokomchi' house in Las Pacayas (see Figure 6.1). The author observed a third form of hearth construction in Sipakapense and Ch'orti' houses, again not described by Wauchope, where the hearth consisted of three stones placed atop a hard-packed earthen mound, which was raised approximately 300 millimetres above the floor of the house (see Figures A6.7) and D4.8).

Significantly, the key outcomes of the regional survey in relation to the three-stone hearth were that there were three forms of hearth construction evident in the houses surveyed; that they are not regionally- or language-specific; and that they referred to a particular religious symbolism related to the Maya Creation Story. In describing Kaqchikel house construction processes, techniques, community involvement and religious symbolism, B.C. commented:

> The first are the stones, the stones are the base so that the base of the timber column does not rot, now they use plastic or nylon – before it was lashing of maize leaves. People before used another type of material but after colonial times for example, the Indigenous used nylon. Actually, people with not much money still use maize. The base represents the four cardinal points and later the beams above, the connection between them. First the draw is done [where four corners are established with rope connectors], then the base is set, then the beams are placed, and then after they place other timbers for the roof, and then the walls. This is

> how the house is formed. The base is first with the columns, the base is sacred and the symbolism is like planting a tree. The base represents the four cardinal points and the beams above, the connection between the house and the heart of heaven and the heart of earth.[16]

He continued:

> Now, if you would like to use the traditional method I have to ask the force how the house should be constructed and where it should be placed. Before, the Indigenous would look for a place where there was a connection with the sun or where there was a connection with a particular star or many stars. Therefore, this is the vision that one sees in a ceremony, the process begins inside the ceremony. Where to construct, where is the force, where are the columns going to be? In the past, people were always asking the ancestors. Therefore, your petitions are very important. If you would like to build a traditional house you have to use the thirteen bases, the thirteen levels, you have to also use the twenty sacred elements or twenty grades. For example, if you want a house, you are not going to build a grand pyramid, but for example, in the entrance you can serve the thirteen levels, the significance of the fire...God will help with the construction; people from the community will also come and help build your place.[17]

B.C. began the description above by outlining the importance of petitioning the gods to support the construction process and determine how the house should be constructed, where it ought to be placed on the site, and in what locations the four columns would be best positioned. He spoke of the numerical associations of the thirteen 'bases' or levels in conjunction with 20 sacred elements, but did not elaborate as to the significance of these sacred elements. In continuing, B.C. affirmed that the thirteen bases or points in the traditional house architecturally referenced the layers of heaven, being: the top and bottom of the four main posts of the house, the bottoms being interred (8 in total); the top, middle and bottom of the central axis of the house/hearth (3 in total); and the two end points of the roof beam (2 in total) – total of 13 points. B.C. described further that the house itself was the connection between the heart of heaven and the heart of earth. The tops and bottoms of the four main posts referred to the four cardinal points of the sky and earth respectively, and the top, middle and centre of the central axis reflected the Heavens, Earth and Underworld of the Maya cosmovision. Notably, Carlsen found a similar reading of numerical association of the number thirteen in the Tz'utujil house of Santiago Atitlan, Guatemala.[18]

In *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals*, Vogt in 1976 does not discuss the actual symbolism of thirteen layers but that Tzotzil houses were an image of the vertical divisions in the Zinacanteco universe.[19] The earthen floor represented the Underworld, thus the custom of interring sacrificial chickens, themselves representing the souls of the dead, in the floor during house dedication rituals. Additionally, the steep pitched roof, in opposition to the earthen floor of the Underworld, is an image of the majestic holy mountain, which houses the ancestral gods.[20] The names of elements of the house represented these associations, with the foundations of the house

being called *Yok* the foot of the mountain, the walls *Sc'ut*, its stomach, the corners of the house *Scikin,* its ear, and *Shol*, the head or mountaintop. The Zinacanteco roof structure had three conceptual layers representing the layers of *Vinahel*, the universe, with the lower third being the realm of the female moon, the middle being the realm of the stars, and the upper third being the realm of the male sun.[21] Again, the house was the container for the connection between the Universe, the Underworld, and Humankind.

Ceremony and Lifecycle of the Maya House

In traditional house construction the semantic significance of Maya houses also influenced house dedication ceremonies. The majority of couples living in the traditional houses surveyed reported that they had built the house together when they had first married. Others said they had lived with either parents-in-law at first until they had the resources to afford to build their house. In all cases, houses were never built before a couple had married, and the majority of houses were left to decay on the death of their original owner-builders. The lifecycle of the Maya dwelling inextricably linked the life of the matriarch and patriarch of the household to the house. Most Maya family compounds consisting of dwellings for extended kin, with additional houses constructed around the exterior patio/courtyard as the family grew.

Construction Ceremony

As seen in B.C.'s discussion presented above, the preparation for house construction began with a petition to one of the community shamans to establish the right time and place for the construction to commence. In turn, the shaman consulted the Maya calendar (*Tzolkin*), and conducted a ceremony to petition the ancestors for their support during the building process. This practice not only determined the date for construction but also the date on which the timbers for the house should be cut on the full moon. Timbers were then left to dry for a month or two, depending on the season, after which they were raised as the main structural columns of the house. Once the shaman had dedicated the site and the day to begin construction established, the remaining materials for the house were either bought or gathered locally by family and community members. B.C., further explained the importance of petitioning the ancestors:

> Now, if you would like to use the traditional method I have to ask the force [energy] how the house should be constructed and where it should be placed...The first thing a shaman does is petition the representatives of the ancestors [*Ceremonia de Petición y Representantes*] to support the construction process and to establish when the best time to begin gathering materials for construction; the second step is the Grand Ceremony on the actual site, where the shaman, alone with other shamans begins to speak formally to the ancestors regarding the house; the third step is to conduct the Principal Ceremony to begin construction; and the final step with the Completion Ceremony where the house is given a soul.[22]

The night (usually midnight) before construction was due to begin, all immediate family members and extended kin, attended the Principal Ceremony performed by the shaman to seek protection for all workers during the construction process. Construction of the house typically took 40 days, and began with 'the draw' as it was called, which involved setting out the floor plan of the house using a *vara* measuring stick and henequen cord. Once the footings for the main structural columns were dug, four flat stones were placed in the base of the holes to protect the end grain of the timber posts from decay. The bases of the four posts were then wrapped with either maize leaf/husk or bark and raised into place. Another length of henequen cord was used to tie the tops of the columns together, which helped to establish the rectangular or square profile of the house until the roof beams were lashed in place. Once the roof beams were secured the roof structure was raised and thatched, after which, the walls of the house were constructed. The house remained incomplete until the final dedication ceremony is conducted to thank the ancestors and the Earth Lord for providing the materials for the house, and keeping participants safe during construction. This final ceremony serves to instil the house with a soul in keeping with the lifecycle of its occupants. Once they passed on, so too did the house. A number of informants reported that house timbers (typically the structural posts) formed part of the inheritance system from one generation to the next. It was common that grandchildren inherited the structural timbers of their grandparents' house for the construction of their own dwelling. This was part of the renewal process which was so important in Maya communities of the past. J.M. shed more light on the lifecycle of the Maya house:

> ...you have to take into account that ceremonies have to be performed before you build the house so that nothing happens to the owners of the house. When you initiate the construction of a house you buy the materials for the house and then perform a ceremony with those materials to be used. You ask God to bless the site so that there are no accidents. When you are to begin construction you perform (along with the Shaman or Priest) another ceremony, some communities are accustomed to performing the ceremony at midnight and invite their neighbours to dinner to celebrate the house and Maya spirituality. They place candles in the corners of the house and sometimes depending on the person, bury meat or cocoa in the centre of the house.[23]

The Maize Metaphor for the Cycle of House and Life

While at the ancient Maya temple complex of Iximche in central Guatemala, B.C. explained that the dedication, construction, life, eventual decay and inheritance of timbers was seen as a reflection of the lifecycle of the sacred maize plant. The life and death of the maize plant was seen as a metaphor for the house and life in general. B.C. explained that everything began when the maize seed was planted, sitting in parallel to the initial petition to the Gods for the house, and the conception of human life; the next phase was the birth and subsequent life of the maize plant, reflecting house construction and family life, and human birth and life. The final stage of the maize plant was its seeding and subsequent death upon which it shed its seeds to the ground for their next rebirth and the process

repeated; thus, the inheritance of structural timbers and their reestablishment playing a major role in the continuation of the original family house. B.C. stated that just as in human life, couples conceived of children before they eventually passed on, and the process continued, with the rebirth of their line with their children and grandchildren.[24] In relation to Tzotzil house construction, Vogt in *Tortillas for the Gods* states:

> Preparations for a new house begin in the autumn under a full moon. Then the wood and grasses are cut, and left to dry until spring when construction is usually started. Two rites accompany the construction of the house. The first, called *Hol Cuk* (literally "binding the head of the roof"), takes place when the walls are completed and the roof rafters are in place. This simple rite does not require a shaman; the workers who are constructing the house direct and perform it….The second rite, called *C'ul Kantela* (holy candle), is performed as soon as possible after the completion of the new house. A shaman performs this ceremony, which serves to compensate the Earth Lord and summon the ancestral gods to provide the house with an innate soul. For the next three days the house must be carefully attended for it now possesses an innate soul and requires special care, "just like a sick person" following a curing ceremony…In the days following the ritual the family members remain at home and begin to place their hair combings in the cracks of the walls, signifying their occupancy and symbolizing their belonging (Bardrick 1970).[25]

Although interviews with members of the Kaqchikel, K'ichee', Ch'orti', Yukatek, and Mam communities revealed that the semantic processes above were slightly different in each Maya group, the major points were generally the same. In all groups, shamans were the representatives of the ancestors who themselves represented the Earth Lord. As all materials for the traditional house came from the Earth, it was imperative to thank the Earth Lord for supplying the materials, and to petition him for his support during the construction process.

Maya Creation: The Dawn of Life

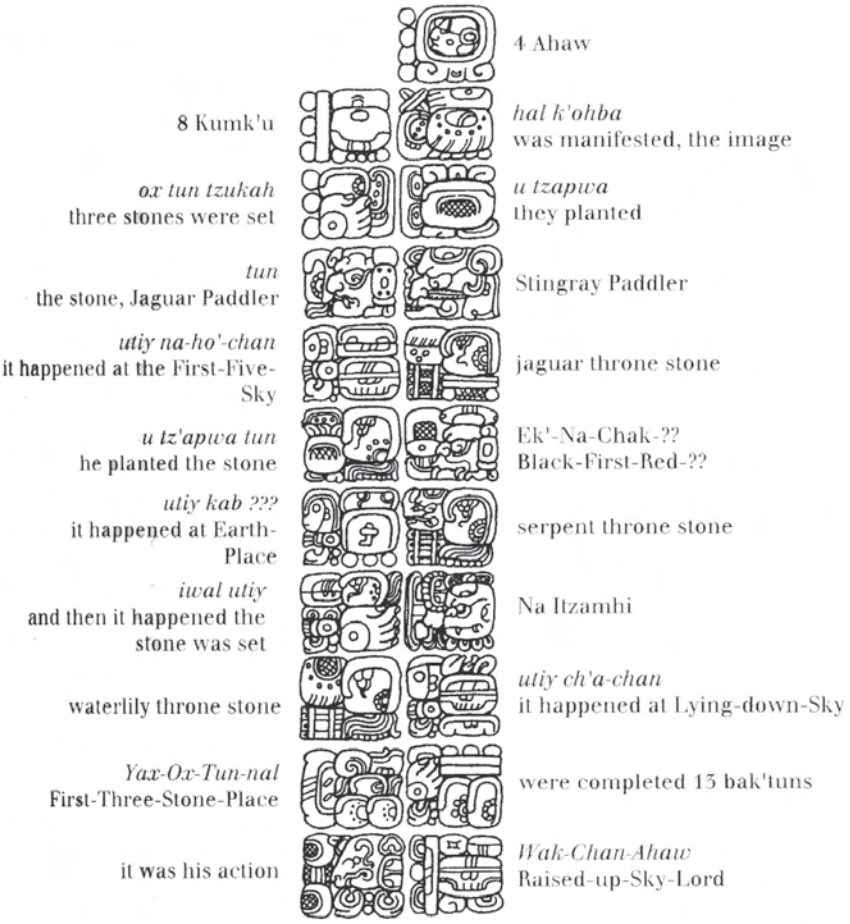
In order to understand the social and cultural significance of Maya built environments and the importance of the Maya house one must begin with the Maya Creation story, which provides the ideological foundation for pan-Maya social activity. It is noteworthy that the description of the Maya creation event below relies heavily on the work of others, who themselves base their analysis on the non-precise science of interpretation and decipherment of pre-Columbian texts and inscriptions. Thus, the following literature review draws from a number of sources including Freidel, Schele and Parker in *Maya Cosmos: Three Thousand Years on the Shaman's Path*, Taube in "The Jade Hearth: Centrality, Rulership and the Classic Maya Temple" and Tedlock in *Popol Vuh: The Maya Book of the Dawn of Life.*[26] These scholars have in turn interpreted ancient epigraphic records such as pre-Columbian inscriptions from Stela C at Quirigua, Guatemala, ethno-historical manuscripts such as the K'ichee' *Popol Vuh* (Book of Council)[27], the Yukatek *Book of Chilam Balam of Chumayel*[28], the Kaqchikel *Annals of the Cakchiquels*[29], *Relaciones de Las Cosas de Yucatan*[30] by Friar Diego de Landa, and the four known pre-Columbian Maya *Codices* (the Dresden, Madrid, Paris and Grolier).

It must be understood that the discussion below relies on interpretation and is therefore under constant review as new evidence is discovered; the current author has attempted to provide the most consistent understanding at the time of writing.

Being one of the major Maya religious texts, the true origins of the *Popol Vuh* remain unknown; however the contemporary version was re-discovered in 1861 by Abbé Charles Étienne Brasseur de Bourbourg, a French ethnographer and historian who travelled extensively in Mesoamerica during the mid 1800s. De Bourbourg was also responsible for re-discovering the 1566 work of Friar Diego de Landa, the author of *Relaciónes de Las Cosas de Yucatan*. The *Popol Vuh* is said to be one of the most sacred Maya texts due to its supernatural qualities, allowing the humans that use it to understand the meaning of life.[31] The story itself begins with Creation:

> This is the account, here it is:
>
> Now it still ripples, now it still murmurs, ripples, it still sighs, still hums, and it is empty under the sky.
>
> Here follow the first words, the first eloquence:
>
> There is not yet one person, one animal, bird, fish, crab, tree, rock, hollow, canyon, meadow, forest. Only the sky alone is there; the face of the earth is not clear. Only the sea alone is pooled under all the sky; there is nothing whatever gathered together. It is at rest; not a single thing stirs. It is held back, kept at rest under the sky.
>
> Whatever there is that might be is simply not there: only the pooled water, only the calm sea, only it alone is pooled.
>
> Whatever might be is simply not there: only murmurs, ripples, in the dark, in the night. Only the Maker, Modeler alone, Sovereign Plumed Serpent, the Bearers, Begetters are in the water, a glittering light…
>
> And of course there is the sky, and there is the Heart of Sky. This is the name of the god, as it is spoken…
>
> And then the earth arose because of them, it was simply their word that brought it forth. For the forming of the earth they said "Earth." It arose suddenly, just like a cloud, like a mist, now forming, unfolding. [32]

According to the *Popol Vuh*, the present human realm is the fourth cycle of Creation since the beginning of time. The book focuses on the third cycle of Creation and commences with the Creator Couple or Mother-Father (*Xpiyakok* and *Xmukane*) creating the cosmos "with the fourfold siding, cornering, measuring, and staking, of the earth-sky, lake-sea"[33] and similar to 'the draw' described in an earlier section of this chapter. The Creator couple are the Maize God – the sun – and First Mother – the moon.[34] After setting out the Cosmos, the Creator Couple next created the "land, sea and sky…and filled them with animals and birds who squawked, chattered, and howled but were unable to speak the names of their makers."[35] The inability of these animals to praise their Mother-Father displeased the creator couple and led to the creation of humanoid beings out of mud and then out of wood.



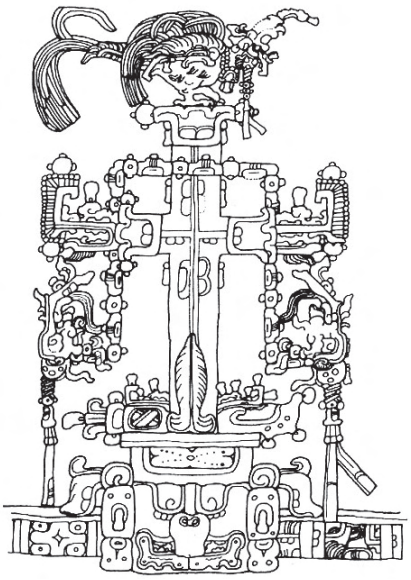


FIGURE 6.2: [top] the Creation Passage inscription from Stela C at Quirigua, Guatemala. Source: Freidel etal., p.67 (1993); [bottom left] the *Wakah-Chan* or World-Tree (left) represents the Milky Way and *Axis Mundi* in pre-Columbian Maya cosmology. Source: Freidel, p.54 (1993); and [bottom right] its physical form on Earth is the Silk-Cotton tree (*Ceiba pentranda*), the largest rainforest tree in the region. Photographer: Davidson.

Again, the Gods were unhappy, as the mud-people proved too soft and the wood-people proved too hard, having no feelings. Dissatisfied with their efforts, the Creator Couple caused the destruction of the Earth with a giant flood, which initiated the rise of the Hero Twins (*Hunahpu* and *Xbalanke*) in their quest to defeat the Lords of *Xibalba* (the Underworld/Death) and resurrect their father (the Maize-God) who had subsequently been killed by the Lords of the Underworld. The Hero Twins are thought to represent the Sun and Venus (morning and evening star), who together, enter the sky in the morning, and leave as night falls, to pass below the earth, eventually being reborn, as in the myth, the following day, having defeated the Lords of the Underworld (night).[36] In defeating the Lords of *Xibalba* and resurrecting the Maize God, *Hun-Nal-Ye*, 'One-Maize-Revealed', the hero Twins set the scene for the fourth cycle of Creation – the dawning of humankind and the 'raising of the sky'.[37] According to ancient inscriptions, this occurred on 4 *Ahaw* 8 *Kumk'u* or August 13, B.C. 3114.[38]

According to the myth, the Creator Couple "were pleased that the humans could speak and express gratitude, but at the same time they were a little frightened" as they could see everything and their knowledge was limitless, but instead of killing these perfect creatures, the Creator Couple decided to prevent humans from seeing and understanding everything.[39] Thus the gods made humans short-sighted to the point that they could only see and understand those things close to them.[40] The Gods then gave humans the *Popol Vuh* so they could again 'see' and understand everything.[41]

In *Maya Cosmos*, Freidel, Schele and Parker draw on the decipherment of ancient Maya hieroglyphic inscriptions to arrive at an understanding of the connection between the Maya Creation event and astronomy.[42] In deciphering the 'Creation Passage' from Stela C at Quirigua, and inscriptions from the 'Creation House' at Palenque, these authors conjecture as to the significance of the Maya Creation account. They interpret the place and point of Creation from Stela C at Quirigua (Figure 6.2) as follows:

> 4 Ahaw 8 Kumk'u was manifested the image. Three stones were set. They planted the stone. The Jaguar Paddler and the Stingray Paddler seated a stone. It happened at Na-Ho-Chan, the Jaguar-throne-stone. The Black-House-Red-God seated a stone. It happened at the Earth Partition, the Snake-throne-stone. Itzamna set the stone at the Waterlily-throne-stone. It happened at Lying-down-Sky, First-Three-Stone-Place (*Ch'a-Chan Yax-Ox-Tunal*), were completed 13 bak'tuns [cycles]. It was his action, Raised-up-Sky-Lord (*Wak-Chan-Ahaw*).[43]

The decipherment of this Stela led some scholars to believe that the actors in the above inscription were principal figures in "the celestial play of Creation".[44] Once Itzamna, the first Shaman, with the Jaguar Paddler and the Stingray Paddler, had set the three stones at the place of Creation, the Maize God (*Wak-Chan-Ahaw*) was in a position to raise the sky and initiate the creation of the Cosmos and

the dawning of human life. In order to support, and hold up the sky, he placed the *Wakah-Chan*, thought to be the World Tree at the centre of the universe. It is currently thought among Maya scholars that the *Wakah-Chan* as the *axis mundi* of Maya cosmology represented the sacred maize plant as well as the sacred *ya'axche'* (*Ceiba pentranda*) tree, which is found in the central square of many Lowlands Maya communities in Mexico and Guatemala (Figure 6.2).[45] The common name for *Ceiba pentranda* is the silk-cotton tree, which is known for having cross-shaped branches when the tree is young. Translation of the hieroglyphic term *Wakah-Chan* has shown it to mean "raised-up sky" in representation of the beginning of creation when First Father the sun separated the sky and earth.[46] Freidel, Schele and Parker believe that the *Wakah-Chan* represented the Milky Way, the central support in what the authors call the quincunxial (five points) relationship with the four corners (or cardinals) of the Earth.[47] The belief that the *Wakah-Chan* was the Milky Way apparently unlocked the significance of the Creation narrative with each character representing a celestial event. For example, depending on its rotational point in the night sky Freidel, Schele and Parker that the ancient Maya referred to the Milky Way as the World Tree, the Crocodile Tree, the Cosmic Monster and the Crocodile Canoe, they continue:

> These Paddlers, then, are central actors in the celestial play of Creation. Like Itzamna, the original shaman, the Paddlers are up in the sky riding the Milky Way to the place of Creation where they will set their stones in the hearth of Orion. They propel the Milky Way canoe with its precious cargo, to the same location... the Paddlers bring the Maize God to the place of the three stones of Creation and to the turtle carapace, the belt stars of Orion, so that he can be reborn and create the new universe. He is the Wak-Chan-Ahaw who made everything happen.[48]

As reported by Schele, Freidel and Parker, the Maya Creation event occurred in pre-Columbian times the heavens on two particular days of the year, February 5 and August 13 (Figure 6.3).[49] In the Classic period, the first act of Creation began at sunset on August 13 when Itzam-Yeh, the Big Dipper, falls from the Crocodile Tree (Milky Way) after being shot by Hunahpu, Venus, the first of the Hero Twins of Creation. The Big Dipper was above the Milky Way at sunset on this day, and as the evening progressed, the rotation of the earth changed the scene; the vertical, north-south Crocodile Tree transformed first into the Cosmic Monster and then into the horizontal, east-west Crocodile Canoe. Jaguar Paddler and Stingray Paddler, two signs of the Maya zodiac, propel the canoe. Later in the evening, the Crocodile Canoe begins to sink under the sea bringing the Maize God to the Place of Creation, the point at which Gemini and Orion meet the elliptic path of the sun. The Paddler Gods (Jaguar, Stingray and Itzamna) then set the three stones of Creation, Orion's Belt, at the Creation Place, represented by the three-stone hearth in traditional houses (see Figure 6.4). This is when Orion, the Turtle in Maya mythology, reached the zenith point of the sky. The Creation Place is also the point where the fire hearth fire was lit. The Creator Couple, Gemini, depicted as two copulating Peccaries, lie nearby awaiting the resurrection of the Maize God from the cracked carapace of the turtle, Orion

(Figure 6.5). Sunrise on August 14 sees the Milky Way in the vertical north-south position with the turtle, the three stones, the hearth, and the two peccaries at the zenith point in the sky. Dawn brings the first moment of Creation, the Maize God rises and with it, his umbilicus stretched out to become the elliptic path of the Sun and Moon. "It is significant that in most Mayan languages, the word for 'to dawn' is also the word for 'to create'".[50]

Part two of Creation continues on February 5 where sunset finds the Milky Way, the turtle, the three stones, the hearth, and the two peccaries at the zenith point in the sky. The story continues with the hearth sinking toward the western horizon, taking with it the Pleiades constellation – seen by the Maya as a handful of maize seeds to be planted in the earth by the Creator Couple, Gemini.[51] Midnight sees the appearance of the Black Transformer, the portal through which things emerge from the Otherworld. The Black Transformer, or Heart of Heaven, is a great empty space in the night sky devoid of any major constellations and the Milky Way. It was at this moment the *Wakah-Chan* (Milky Way) rises in the east. Two hours before dawn the World Tree moves from the eastern hemisphere to take up the north-south zenith position. "The top of the tree edged past the heart of heaven in the north, while the scorpion [Scorpio] sat at the base of the tree in the south".[52]

Schele, Freidel and Parker explain that the heart of heaven, the North Star, Polaris, was the main axis of the sky, being the rotation point for the constellations in the northern hemisphere and make the point that during the Classic period Polaris was not the North Star, as the north polar axis fell in a dark area of the night sky called the Black Transformer.[53] February 5 and August 13 also marked the beginning of the agricultural cycles which coincided with the ritual and solar Maya calendars (260-day and 365-day respectively).[54] In raising the sky, the *Wakah-Chan* (Milky Way) acts in the heavens as a great tree "with its buttress roots in the south".[55] One of the final moments in the Creation story was the dedication of a house in the north made of eight partitions. "On earth these unfold as the *kan tzuk, kan xuk*, 'four partitions, four corners'". When the sky-earth house was ready, the Gods dedicated the four corners of the house, the sacred tree (*axis mundi*) supported the roof from the place of Creation (three hearth stones) and the first fire had been lit connecting the Otherworld, the Heart of Earth. In a similar manner to house dedication ceremonies whereby the priests/shamans set candles at the base of the four main columns. Once it was finished, the only remaining act was the Creation of Humankind.

> As the sun, moon, and stars were about to appear over their heads, Xpiyakok and Xmukane [the Creator Couple] stood thinking about what they would need to create humanity. They knew that true people would need to be made from yellow and white maize, but where to find it? Fortunately, a fox, a coyote, a parrot, and a crow came to help them, bringing news of a mountain called Split-Place (…Yax-Hal-Witz, "First-True-Mountain"). The mountain was full of fine foods…Xmukane, the First-Mother, ground the yellow and white maize nine times. The ground maize became human flesh and the grease from the water in which

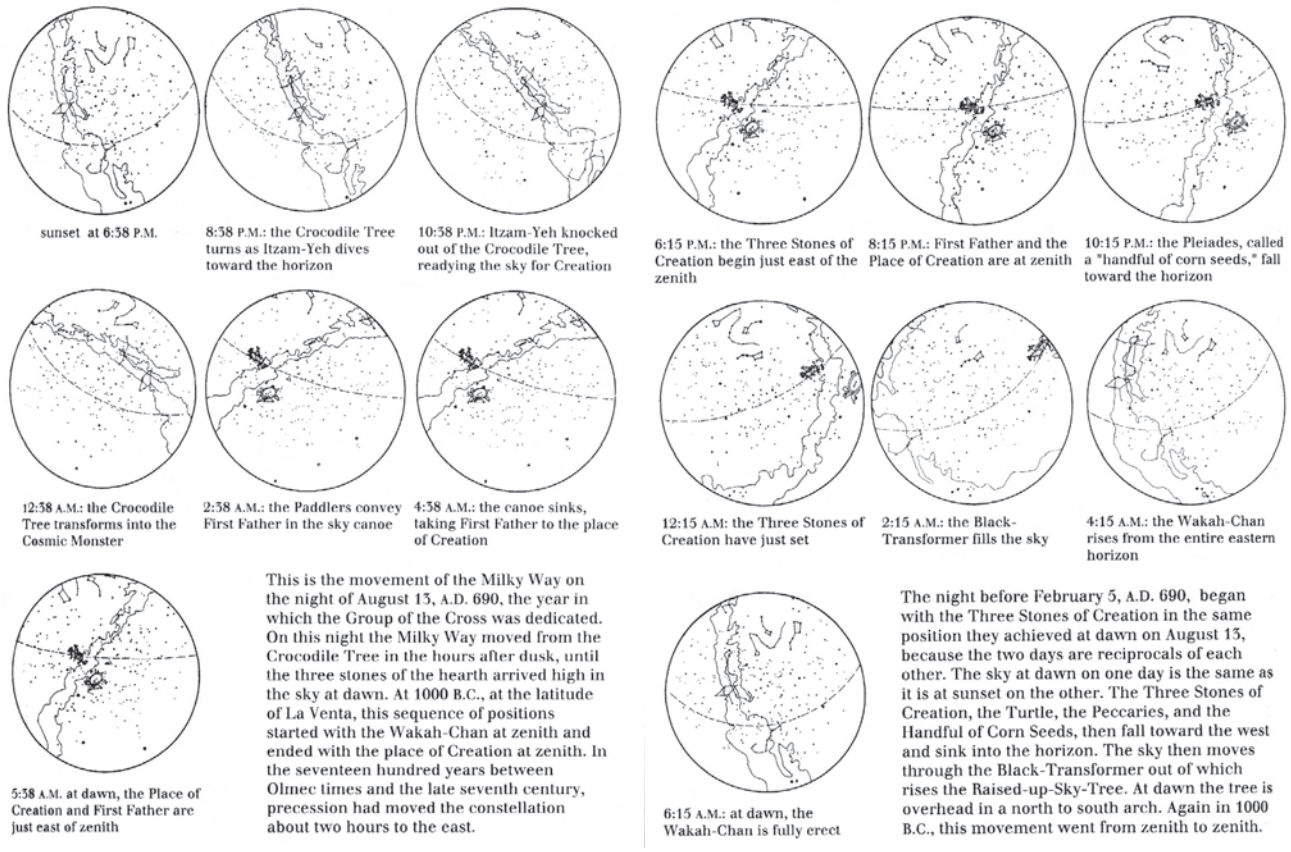


FIGURE 6.3: According to Freidel, Schele and Parker, the Maya Creation event can be read in the heavens, with Part 1 of the story being told on August 13 each year, followed by Part 2 on February 5 the following year. The major actors are the Crocodile Tree as the *Wakah-Chan* or Milky Way; the Turtle of Rebirth as Orion; the Three Stones of Creation as Orion's Belt; the Heart of Heaven; the Copulating Peccaries as Gemini; and the Maize God, the Sun. This story is referenced in the cognitive schemata associated with Maya houses. Source: Freidel etal., p.97, 98 (1993).

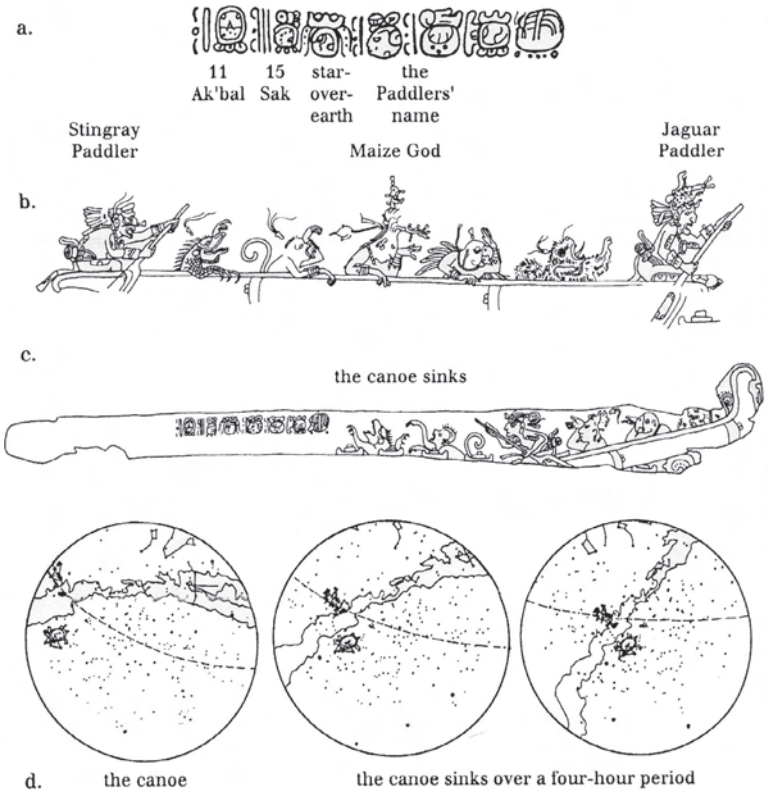


FIGURE 6.4: The Paddler Gods who set the 3 Stones of Creation at the Creation Place, Orion's Belt. Source: Freidel etal., p.90 (1993).

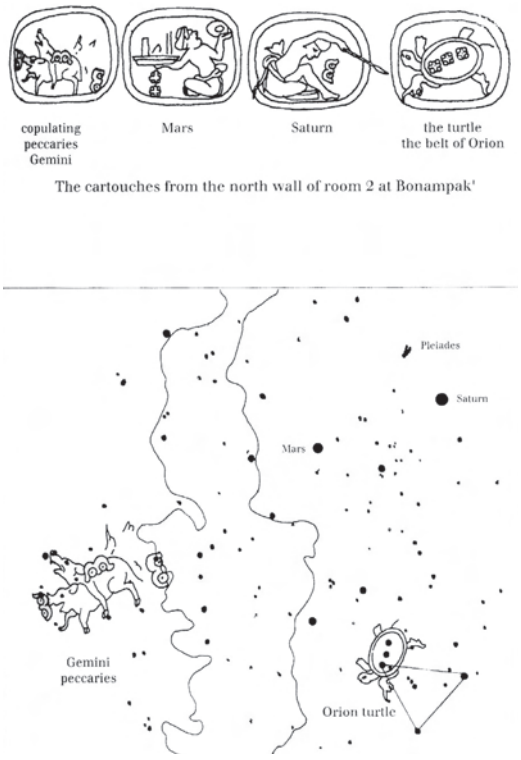


FIGURE 6.5: The Copulating Peccaries (Gemini), the Turtle of Rebirth (Orion) and the 3 Stone Place of Creation (Orion's Belt). Source: Freidel etal., p.81 (1993).

> she washed her hands became human fat…The first human beings turned to their Creators and thanked them.[56]

The significance of the Creation story to the built form of the Maya dwelling and to this thesis cannot be understated. It is this author's contention that the house, which on its surface appears as a simple climatically-determined construction, actually embodies the story of Maya Creation on earth, just as "the sky itself is a great pageant that replays Creation in the pattern of its yearly movements"[57], the house is a reflection of a complex cultural story. Freidel, Schele and Parker discuss the presence of a number of 'common themes' of creation, which set the context for the following discussion and include the Creation House of Sky-Earth, the Maya quincunx, and the Place of Creation. Freidel, Schele and Parker continue:

> We in the West tell Creation stories that show our reverence for science: the Big Bang, the General Relativity Theory, the Theory of Chaos. We have created these cosmic models of reality to explain how things got to be the way they are, and how the basic stuff of the universe works, where we came from, and where we are going. We use science and its tools to try to understand our world, our nature as living beings, and to optimise the chances that the future will work in the way we anticipate will be best for us collectively and individually. The Maya myth of Creation is no different – whether told in its sixteenth-century highland K'iche' form or in the version inscribed on sixth-, seventh-, and eighth-century stone monuments in the ruins of the lowland royal capitals. The myth of Creation, the symbols that expressed it, and the rituals that celebrated it were the tools the Maya used to investigate the same questions…For the ancient Maya, Creation was at the heart of everything they represented in their art and architecture…these objects mirrored the Maya's unique vision of reality.[58]

Dedication of the Creation House of Sky-Earth

One of the first acts of Creation was the dedication of the Creation House, or House of the North. The *Popol Vuh* recounts that this involved the "fourfold siding, fourfold cornering, measuring, fourfold staking, halving the cord, stretching the cord, in the sky, on the earth, the four sides, the four corners, as it is said, by the Maker, Modeller, mother-father of life, of humankind".[59] This 'fourfold siding, cornering and staking' of the earth-sky – the earth and sky were touching at that time – established the limits of the cosmos and was a way of ordering the universe, and in turn, the human world. It is also one of the first acts undertaken by contemporary Maya in house, field and altar dedication rituals.[60]

> First Father's entering into the sky was portrayed in the poetic metaphor of a house dedication...Thus we know that the Maya thought of the entire north direction as a house erected at Creation with the World Tree, the Wakah-Chan, penetrating its central axis. First Father "entered the sky" by raising this tree out of a plate of sacrifice.[61]

The Creation story describes the vaulted roof of the House of the North as a container for the 13 layers/planes of Heaven, which sat in polar opposition to the nine layers/planes of *Xibalba* (Otherworld/Underworld), the night. The numeral 13 was a reference to the 13 sacred signs of the Maya zodiac and the 13 sacred days of the 20-month, 260-day short-count ritual Maya calendar, the *Tzolkin*. Some authors believe the 260-day short count calendar referred to the period of human gestation, but this is only speculation.[62] Demarest provides an image of the Classic Maya cosmogram showing the World Tree in relation to the 13 layers of the sky, the quadripartite earth, and the nine layers of the underworld.[63] The cosmogram shows the human realm on the back of a two-headed caiman or turtle positioned between the sky and the Underworld. Thus, the Maya *axis-mundi* connected the Godly realms of upper (Heavens) and lower (Underworld) by passing through the earth. The symbolic significance of the numeral nine to Maya temple architecture has long been apparent to researchers. "The nine layers of Xibalba were materially recreated in the stepped temple pyramids, which commonly had nine layers. Maya temples were sacred mountains, whose temple doors provided access to the temple room, the mountain, and the underworld".[64] Temples are understood by Mayanist scholars to have been sacred houses owned and inhabited by the gods and ancestors who chose to reside in them.[65] As Freidel, Schele and Parker affirm, this was even reflected in the naming system of ancient temples:

> The Maya conceived of the roof of this house of eight partitions as the dome of heaven, but they also specifically called it *yotot xaman*, "house of the north." For the Classic Maya, the central axis of the cosmos did not run from the zenith of the sky to its nadir - that is, from the point in the sky directly over our heads to the point exactly under our feet. Instead, it penetrated the heavens at the north celestial pole, which today lies near Polaris, the North Star.[66]

Additionally, the symbolism of eight partitions in the House of the North is reflected in ancient Maya temples. In "The Gendered Architecture of Uxmal" Trevelyan and Forbes assert that the "iconographical program of the South Building in the Nunnery Quadrangle is far simpler than the other three facades, made up entirely of house forms spread along the whole facade above each of eight doorways".[67] The houses, elliptic snakes and the eight doors were a statement about the function of the temple and its connection to Maya cosmology.

The Maya Quincunx: Houses, Altars, Fields and Settlements

It has become evident from the discussion above that the ancient Maya conceived of the dedication of a house as the metaphor for raising the sky or cosmic creation. Freidel, Schele and Parker interpret the *Popol Vuh* house-metaphor, stating that the Tree of Creation, which rose out of the offering plate of sacrifice, supported the roof of heaven. The offering plate of sacrifice is believed to be a metaphor for the three-stone hearth found in contemporary traditional housing and the remains of ancient Maya temples and palaces. Thus, while the four corner posts (representing the cardinal points) physically supported the roof structure, the *Wakah-Chan axis-mundi* rises out of the three-stone hearth to

metaphysically hold up the roof apex and 'raise the sky'. The *axis-mundi* ascends from the centre of the three-stone hearth and connects the hearts of earth and sky. In an earlier interview, B.C. described the importance of the hearts of heaven and earth: "The base represents the four cardinal points and the beams above, the connection between the house and the heart of heaven and the heart of earth."[68]

In reference to the current author's regional survey, an analysis of individual houses shows that all appear to have been generated using the same symbolic principles but with a different result in house form. The common principles or architectural 'themes' observed during fieldwork and reported by informants were the rectilinear or square floor plan, the four main posts being positioned at either the corners (Mam) or along the long facades of the house one metre back from the end to allow the corners to float free from the roof load (Yukatek). Apsidal (curved ends) floor plans were evident in the Yukatek region but not in other regions; however, the apsidal house still followed the main principles of four columns floating free of the wall framing in supporting the roof structure (see Figure 6.11). Additionally, there may be a suggestion that the apsidal floor plan symbolically reflected the elliptic path of the sun in Maya cosmology. There were examples of the four main posts being placed in the centre of the four sides (Tz'utujil) of the house, and others (such as the Q'anjob'al), where the four sides of the house reflected the four cardinal points. Taube verifies that the four sides of ancient Maya temples also reflected the four directional sides of the Maya Cosmic house (the house of the North).[69] However, house and ancient temple architecture were not the only physical realms representing the Maya cosmos and Creation story. A number of recent studies have denoted the significance of the shaman's altar, the house altar and the maize field or family *milpa* (Figures 6.8 and 6.9).[70] There is also evidence that ancient settlement patterns conform to this model of the universe with the quincunx (four posts and central *axis mundi*) touching every aspect of Maya daily life, be it shelter, prayer or work.[71] As Gillespie in "Maya Nested Houses" affirms:

> The house, the table altar, and the milpa are all four-sided; hence they mimic the cosmic form. Though not actually square, villages are also thought of as having four sides, each with an entryway guarded by a shrine composed of one or more crosses atop a stone or masonry altar…the square form is explicitly marked on its four corners or its four sides in some way – the corner posts of a house, the trees that mark the corners of a maizefield, the candles set on the four corners of the altar, and the cross shrines at the four entrances to the village.[72]

Gillespie further clarifies that Maya domestic altars represented the quincunx, being seen as miniature houses, to the point where they shared common names with various elements of the house.[73] The domestic altar was the earthly residence of the gods and ancestors just as the ancient temple once was. As Taube states: "In ancient Maya temple scenes, gods frequently appear in their thatched houses, and the representations of thatched buildings on Maya structures probably denoted them as dwelling places of the gods".[74] Accordingly, this understanding elucidates that the form of the house, and in turn

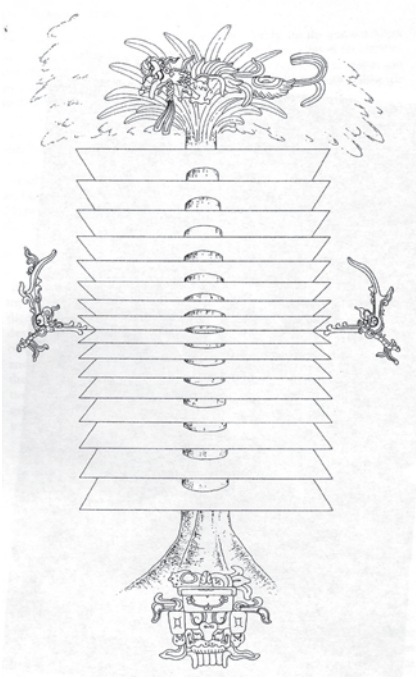


FIGURE 6.6: Schematic representation of the Classic Maya cosmology showing the world tree (*axis mundi*) in the centre, and the layers of heaven and the underworld. The human world is located at the middle point and is shown by the snakes heads representing the umbilical path of the sun. Source: Freidel, Schele and Parker.

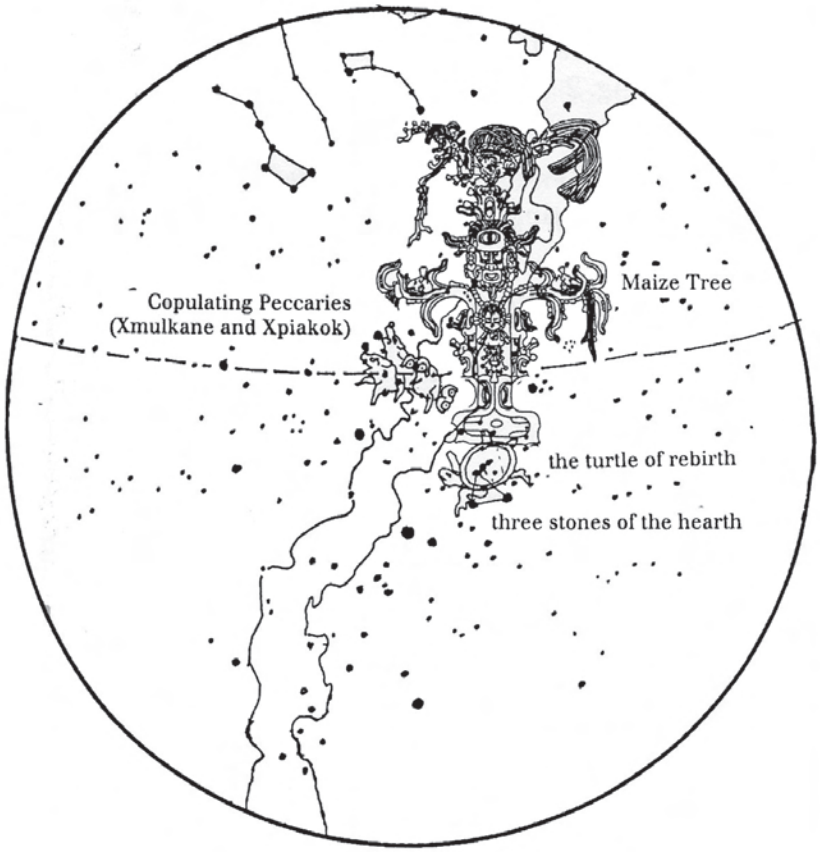


FIGURE 6.7: The Place of Creation occurring just prior to sunrise on February 5 each year in the sky over the Maya lands. Dawn is the birth of the Maize God, the Sun. Source: Freidel etal. p.85 (1993).

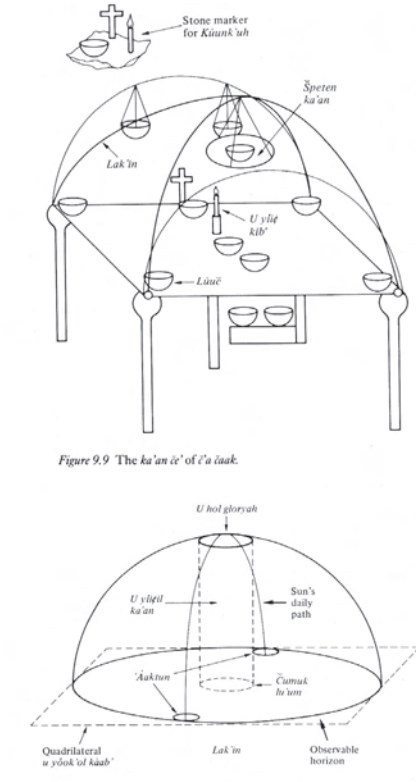


FIGURE 6.8: A diagram of the influence of the Maya quincunx in the design of a Yukatek shaman's altar, note the central *axis mundi*, and four posts in a similar design to the Maya house. Source: Sosa (1989).

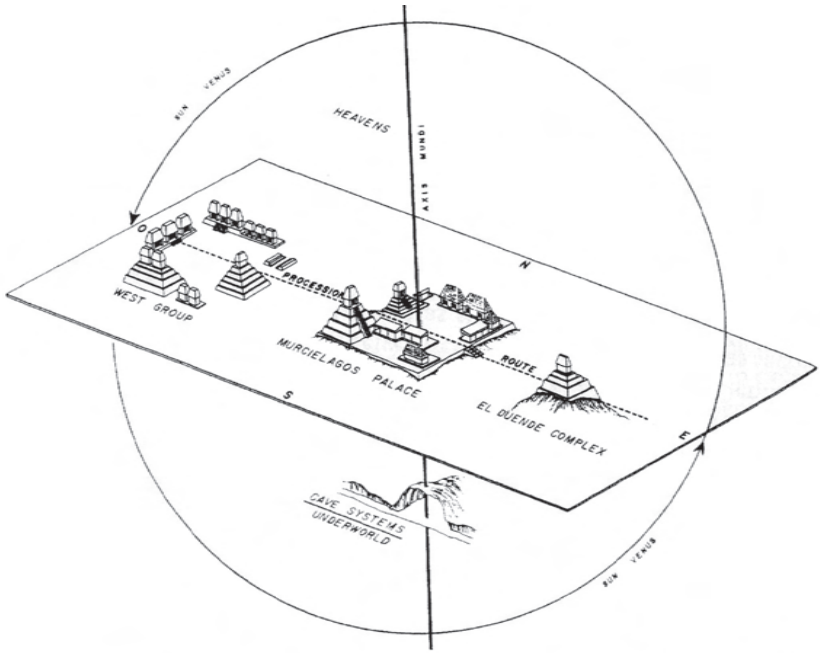


FIGURE 6.9: The Maya Quincunx directly reflects the Creation Story and established the basis for settlement planning as seen here at the Classic Maya city of Dos Pilas, Mexico. Source: Demarest (2004).

altar, cannot be different to the square or rectangular form of the field. Furthermore, the placement of candles on the four corners of the altar reflects house dedication ceremonies where candles are set at the four corners (cardinals) of the house as well as at the altar. The ritual process involved in house dedication is a reflection of the Creation event, which Gillespie describes as creating the Maya world order.[75]

In *Zinacantan: A Maya Community in the Highlands of Chiapas*, Vogt depicts the Zinacanteco *Ch'ul Kantela*, or 'Holy Candle' ceremony, undertaken to give the house a soul.[76] According to Vogt, once the house has its soul it is thought of as a sick person, and must be taken care of for the three days following the ritual. Once the shaman completes the initial dedication ceremony, the owners of the house proceed to place hair in the cracks of the walls as "a symbol that they belong to the house".[77] Vogt also highlights that the allocation of space inside a Zinacanteco house symbolically represents the 'binary opposition' between east and west, with the male side toward the east and the rising sun and the female side in the west with the hearth, toward the setting sun.[78] In analysing the survey findings, the current author found supporting evidence of this in some areas, however, the majority of informants claimed that this semantic socio-spatial pattern was less importance in the present day. In "Cosmological, symbolic and cultural complexity among the contemporary Maya of Yucatan," Sosa exposes the quadrilateral structure of the shaman's altar, and in doing so presents a clear depiction of the Maya cosmogram, or as he calls it, the *cosmological conduit*.[79] He states: "[The shaman's] altar was the present expression of the Maya cosmic center: the *axis mundi*, transferred through practice and apprenticeship from shaman to shaman for nearly a hundred generations".[80] As Freidel, Schele and Parker have shown below, the true expression of the shaman's altar can only be seen during the ritual:

> When [the Shaman] performs his rituals, he regenerates the order of the cosmos and rejoins the two separated worlds, the human world and the Otherworld, by creating a portal. Within this holy space, he calls forth and binds together the fourfold gods: the rain nurturers, the protectors, and the burden-bearers at the edges of the world. From the center he brings the source of life to his people. Through the now open portal to the Otherworld, he sends maize and other sweet and fresh things to the other side so that they may nurture and honor both the lesser gods and God Almighty. This sacred, universal space that he creates is the center of the heavens, and the center of the earth. He calls it *u hol gloriyah*, the 'glory hole.'[81]

The Place of Creation: Three-Stone Hearth

The final 'theme' common to the majority of Maya *casas de paja* is the three-stone hearth. As demonstrated in the Creation account, one of the first acts of Creation was the establishment by the Paddler Gods of the Place of Creation in readiness for the rebirth of the Creator, the Maize God (Figure 6.14). Three stones bounded this place and represents "the stars Alnitak, Saiph, and Rigel in Orion, which are said by the Quichés to be the three hearthstones of the typical Maya kitchen fireplace,

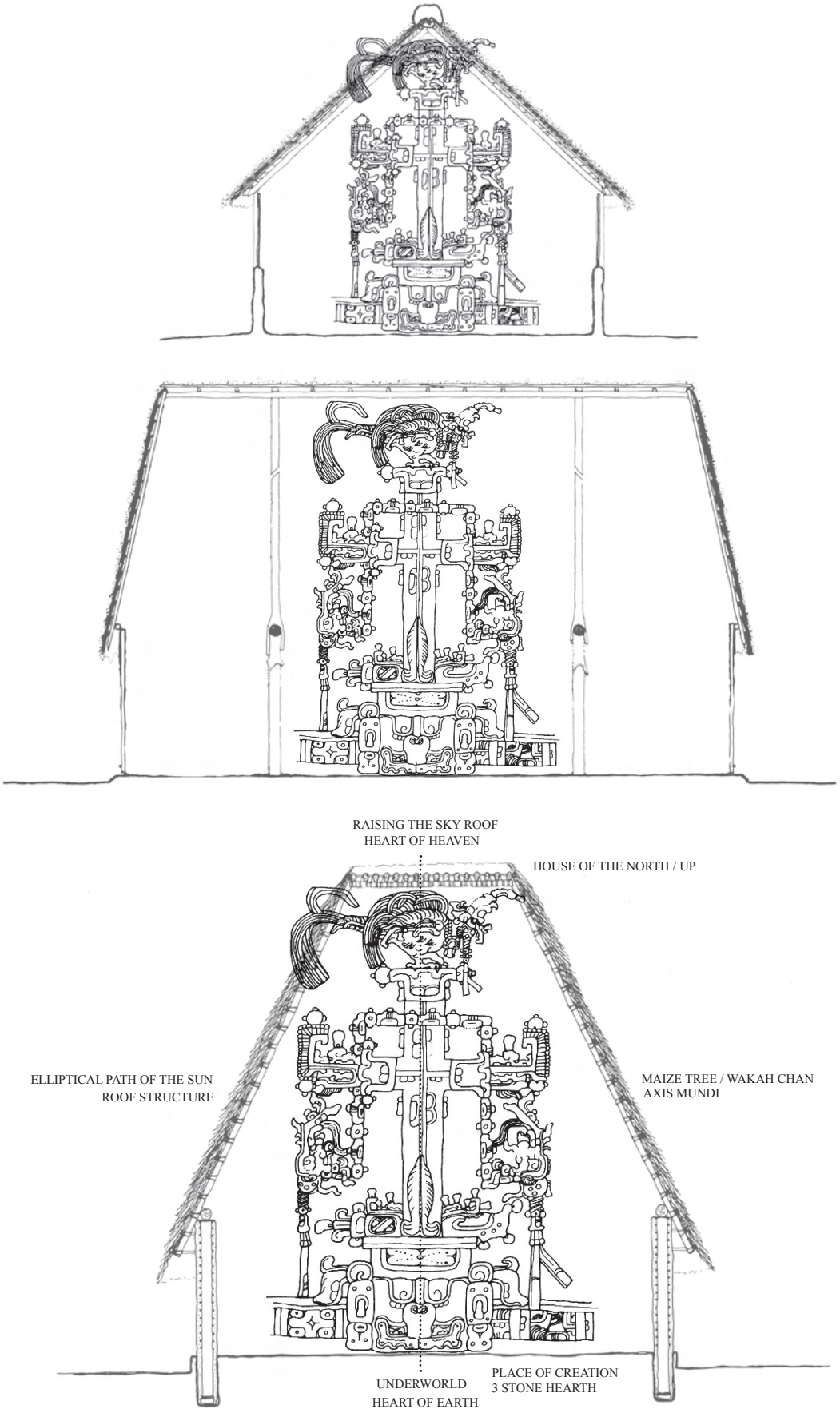


FIGURE 6.10: The author's reconstruction of the semantic significances of pre-Columbian Maya house architectures. The image above is the result of the combination of fieldwork recordings and the epigraphic work of Mayanist scholars, and illustrates how the Wakah Chan rises out of the Place of Creation to Raise the Sky-Roof and House of the North. Source: Author.

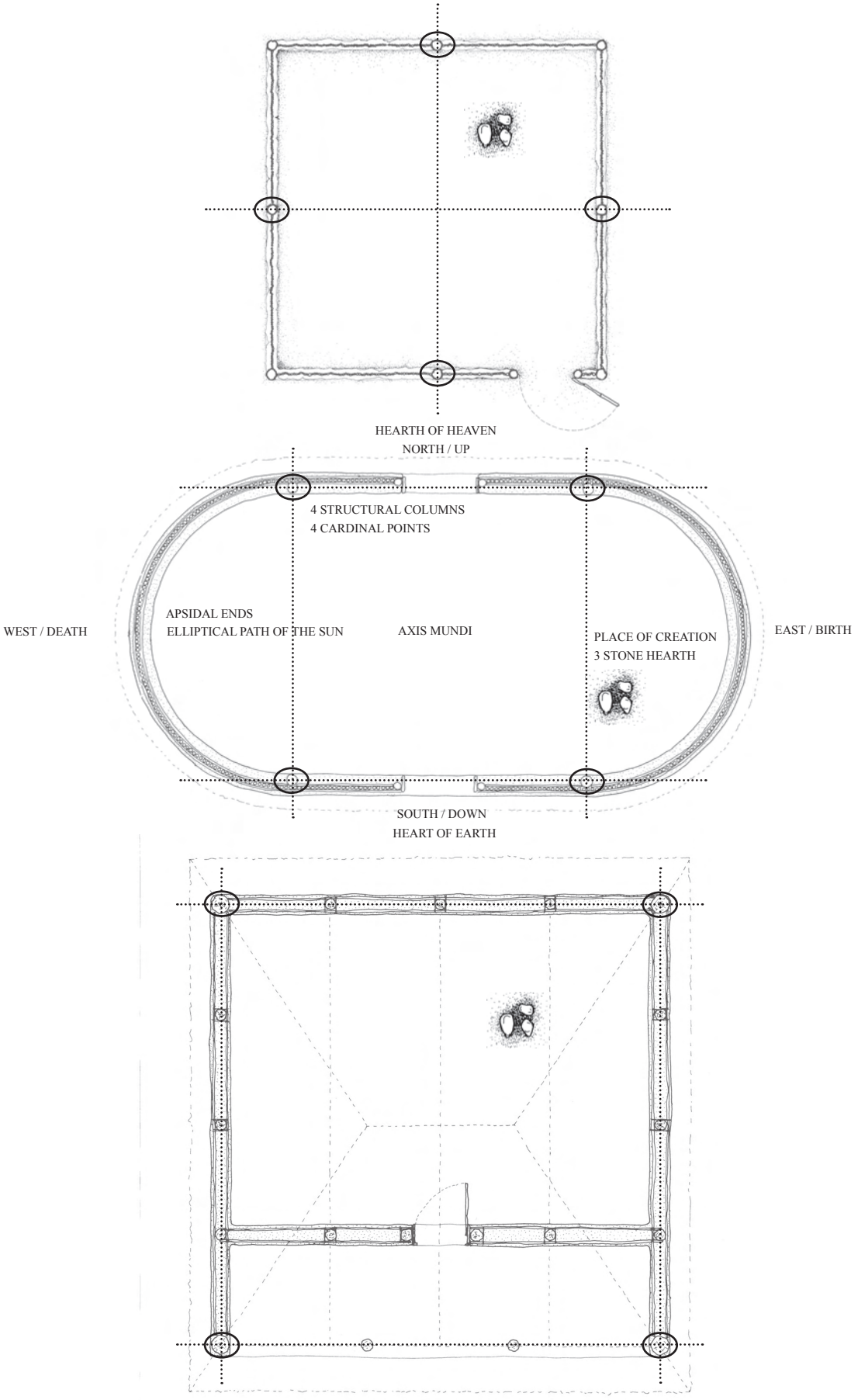


FIGURE 6.11: Semantic associations as observed in the varying plan forms of pre-Columbian Maya houses. The four principle columns or corners represent the four cardinal points or four corners of the Earth's surface, the three stone hearth represents the Place of Creation and Axis Mundi out of which the World Tree supports the Raised-Up Sky-Roof of the House of the North. Source: Author.

arranged to form a triangle".[82] As discussed in Chapter 5, the current author's survey confirmed the three-stone hearth to be a common phenomenon among contemporary Maya in all geographic regions of Guatemala and Mexico. "As the hearthstones surround the cooking fire and establish the center of the home, so the three stone thrones of Creation centered the cosmos and allowed the sky to be lifted from the Primordial Sea".[83]

In *Maya Cosmos*, Freidel et al. described the cosmic house as the vessel containing the heart of heaven, the axial point at which the heart of earth connected the Otherworld and the ancestors.[84] The heart of heaven was the centre of the universe around which the constellations revolved (currently the North Star Polaris). These revolving constellations formed the roof of the cosmic house, which contained eight partitions similar to the nunnery at Uxmal, described earlier. The hearth was the physical connection of the heart of the sky on earth, echoing the Creation story in that at one time they were one. This same description can be used in relation to the traditional house in contemporary times. Taube states that traditional Maya houses lack a central main post from which the directions radiate, instead being represented by the three-stone hearth known as *k'oben* in Yukatec, *yoket* in Chol, Tojolobal and Tzeltalan languages, and *xkub* in Quiche.[85] "As the first central place, the simple three-stone hearth may well constitute the original construction of creation, antedating even the erection of the four corner posts."[86]

In light of Taube's account, it is the current author's contention that the quincuncial relationship of the Maya house, the four cardinal posts and the central World Tree supported from the hearth of creation, served to *focus* the communication and connection to the Underworld and the Heavens above. The act of sitting around a fire was in fact a ceremonial or ritual method of praising the gods, encouraged by the warmth of the fire. The Creation story declared that the Gods believed it important that people praised them. The fire represented the connection to the Otherworld and the hearthstones a connection between sky and earth. In discussing the lifecycle of the Maya house, Freidel, Schele and Parker disclose:

> ...the K'iche' bury the umbilical cord and afterbirth from a female child in the center of the hearth, while a male's umbilical cord is placed in the top of a tree. When we examine these actions against the backdrop of what we know of sky-symbolism, we see that the hearth is in Orion, while the top of the tree is in the region of the Wak-Chan-Ki, the raised-up heart of the sky. The cords in the Na-Ho-Chan are the umbilical cords emerging from the Maize God's body at the Orion-Gemini are the umbilical cords emerging from the Maize God's body at the Orion-Gemini Place of Creation. They also emerge from the Raised-up-Sky-Heart at the north celestial pole. In the Classic Maya mode, they have snake heads at each end...these snake-cords could be stretched out to become the Double-headed Serpents of the elliptic.[87]

Consequently, the act of the World Tree rising out of the place of Creation (hearth) was reflected in the daily activities of Maya households. Fire was seen by B.C. as the way of communicating and paying homage to the gods and ancestors each day. It was by the very act of the household sitting around the fire discussing daily issues that enabled the ancestors to 'listen in' and participate in family life. L.M. reported during fieldwork that if the fire goes out in the house it feels to the family as if the 'soul' of the house and subsequently, the family, has also gone out also. In a further interview, B.C. stated that fire was the instrument used to communicate with the ancestors. Taube also supports this view:

> Fire was the medium by which individuals conjured the gods through the offering of blood, copal, and other precious substances. These fire rites involved a ritual process that could be best described as *focussing*, a term derived from the Latin *focus*, meaning "hearth." During the ceremony, there was a focussing of scale and attention from the temple to the place of the fire itself, which became the specific point of communication with the divine.[88]

In discussing the Creation event and its significance in relation to the beliefs and practices of the ancient Maya, Friedel, Schele and Parker state: "Maya cultures evince continuity particularly in their core ideas about the essential order of the cosmos, its patterns and purposes, and the place of human beings in it...Through participation in these rituals, the Maya, both exalted and ordinary, reaffirm their culture's deepest truths."[89] Martin Prechtel in *Secrets of the Talking Jaguar* calls the midpoint of the house the 'umbilicus' further reflecting the connection between the human body, the path of the sun, and the hearts of heaven and earth.[90]

Figures 6.10 and 6.11 are the current author's interpretation of the semantic significance of the architectural elements within the various plan forms (square, rectangular and apsidal) and sections of Maya houses documented. These images have been overlaid with the *Wakah Chan* representing the World Tree, Milky Way and Maya *axis mundi* shown to be rising out of the three-stone hearth in centrally supporting the roof of the house.

Architectural Communication: Signified and Signifier

The results of the author's architectural ethnography and subsequent literature review illustrate the underlying semantic significance of the traditional houses surveyed. In contributing to a greater understanding of Maya house architectures, the following discussion positions the findings above in relation to the broader theoretical framework of the field of cross-cultural architecture studies, and in doing so, has drawn on the works of a number of seminal authors in the field, most notably C.S. Peirce, Amos Rapoport, Paul Memmott and Richard Blanton, all known for their work with systems of non-verbal communication (meanings) in architecture. Specifically, the aim of the discussion is to understand how the ethnography contributes to the overall theoretical framework of cross-cultural architectural studies. During the regional survey, the author observed that Maya houses

communicated a message to those who could read and interpret its architectural language. To those outside this linguistic indoctrination it would have been impossible to understand, as the architectural communication was subtle and implicit, inherent in the overall structure and form of the house versus other examples, such as temples and palaces, which were decoratively explicit in their architectural communication. Consequently, the house is a vehicle for human communication on many levels, both physical and non-physical (social meanings).

In "Systems of Activities and Systems of Settings" Rapoport posits that 'architecture' is composed of activities, settings and meanings, with these three elements interwoven whereby 'meanings' are a function of 'activities' and 'activities' are a function of 'settings'.[91] In "Levels of Meaning in the Built Environment" he argues that meanings permeate people-environment relations in three significant ways: "the human propensity to impose meaning on the world; the built environment as influencing behaviour through meaning; [and] meaning as an important mechanism linking environments and people".[92] Thus, 'meaning' becomes one of the most important links in the relationship between humans and their architectures. "It is important to emphasize the importance of meaning, indeed its *centrality*, in understanding the built environment and material culture."[93] Rapoport continues in *The Meaning of the Built Environment: A Nonverbal Communication Approach*, noting that "meaning is not something additional to [architectural] 'function' but is possibly the most important function."[94] Hence, the ethnography described in this chapter appears to support this assertion, as the behaviours associated with the architectural product of the Maya house reinforce and permeate the traditional belief system and Maya worldview through human actions, meaning becomes a function of architecture.

One of the most effective methods of understanding the communication of meaning through built form is the study of systems of environmental signs, commonly known as 'architectural semiotics'. Memmott in "Aboriginal Signs and Architectural Meanings" describes architectural semiotics as a sub-field of the wider discipline of semiotics, which emerged in the early 1900s through the work of American philosopher C.S. Peirce and Swiss linguist Ferdinand de Saussure.[95] Peirce's interest lay in the human construction and transformation of knowledge through signs, while de Saussure studied systems of social communication through signs.[96] Memmott states: "Proponents of architectural semiotics hold that buildings comprise cultural systems of signs, communicating various types of information which include messages about the functions and uses of the buildings as well as other types of symbols and ideologies."[97] The relevance of architectural semiotics to the present discussion related to understanding the semantic associations, and methods of nonverbal communication utilised in traditional Maya house architectures. In summarising Peirce, Memmott breaks the generic 'sign' reference into three categories, symbol, icon, and index, being:[98]

> 1. icon a picture, image, diagram, metaphor or other representation; a sign which stands for its object by virtue of its resemblance or analogy to it.
>
> 2. index 'a sign whose specific character is causally dependent on the object to which it refers but independent on the interpretant (e.g., a bullet hole in a fence is an index that a shot has been fired).' (Webster's *Third International Dictionary*)
>
> …a sign which would, at once, lose the character which makes it a sign if its object were removed, but would not lose that character if there were no interpretant. Such, for instance, is a mould with a bullet hole in it as a sign of a shot, for without the shot there would have been no hole; but there is a hole there, whether anybody has the sense to attribute it to a shot or not. An index thus appears to be functionally or mechanically linked with the something that made it. A footprint is a good example of an index. It is an index of someone having walked past a particular place. Its physical shape does not visually resemble somebody walking (as in an iconic relation) nor does one require a cultural rule to interpret its signified meaning (as is the case with a symbol).
>
> 3. symbol a type of sign which has an agreed-upon meaning designated by a group, and whose meaning cannot be deciphered by inspection, in the way that an icon or an index can be. Understanding the meaning of the symbol can only occur if such has been previously learnt from those who share in an understanding of the meaning. It is essentially a more abstract type of sign.[99]

After Burks (1949), Memmott proposes a compound sign called an 'indexical symbol' as an extension of Peirce's theory of signs. An indexical symbol was viewed as a more complex kind of indexical sign, which incorporates components of both 'symbolism' and 'indexation'. Memmott uses the analogy of 'Thuwathu', the Dreamtime Serpent, stating that in Australian Aboriginal religion, the indexical sign of the rainbow, as Thuwathu's presence, is also a symbol of Thuwathu's presence.[100] It is the contention of this thesis that the Maya house comprises another type of compound sign, an 'iconic symbol', representing the House of the North in raising-the-sky-roof in Maya cosmology (the icon), as well as the broader *Wakah-Chan*/Milky Way (the symbol) in linking the Hearts of Heaven and Earth (three-stone hearth and *axis mundi*) to the four cardinal points of the Earth's surface (the four corners or posts). The house was and is a picture and image of Maya worldview (as in the icon), but it also requires an interpretant to understand its signified meaning (as in the symbol), which is supported by Memmott's statement that the "environment represented and continues to represent... a complete sign system of indigenous Aboriginal knowledge, a system of people-sign-environment relations."[101] Pre-Columbian Maya house architectures, altars, fields and settlement patterns were, and still are, concentric layers of significance with a distinct people-sign-environment relationship.

Conversely, Rapoport in *The Meaning of the Built Environment: a nonverbal approach* denounces semiotics as linguistic 'decoration' in relation to the study of 'meaning' in the built environment, calling it a 'stagnant and degenerating research program' and in so doing proposes a solution whereby he distinguishes three 'distinct' levels of meaning as high, middle, and low. High meaning relates

to cosmologies, cultural schemata, worldviews, philosophical systems and the sacred; middle-level meaning reports those latent connotations communicating identity, status, wealth and power; and low meaning is associated with the everyday instrumental meanings enabling users to behave appropriately and predictably.[102] Rapoport's work is useful in understanding the promotion and demotion of meanings in relation to the cultural change processes underscoring building transformation discussed in the following chapter. While not a completely practical theory in itself, Rapoport's work should be in addition to the theory of architectural semiotics in relation to cross-cultural architecture studies.

In building on the work of Rapoport and Pierce, Blanton's *Houses and Households: A Comparative Study* provides a cross-cultural study investigating houses as vehicles of social communication. He classifies two types of non-verbal communication (canonical and indexical) as relevant to an understanding of houses whereby canonical pertains to communicating "the meaning of enduring symbols reflecting concepts held in common by people participating in a common cultural system" while indexical relies on external architectural decoration to communicate wealth and status to other households.[103] Generally, the canonical communicates "ultimate sacred propositions" related to belief systems whereas the indexical is limited to communicating wealth and status.[104] Blanton states that symbolic communication through house architecture manifests social divisions and provides a "material frame that structures not only day-to-day interactions, but also the more infrequent formal household rituals."[105] He describes the pragmatic realities of investigating canonical and indexical communication in the house whereby canonical communication is generally understood through observation of a household's most private interior 'back regions' whereas indexical communication is seen in the more public exterior 'front regions' (pre-entry, facade and roof elements) of the house.[106]

While Blanton's work is useful in understanding the architectural expression of some house traditions, it does not delve deep enough into its subject matter (only drawing on a limited number of examples) to become a definitive methodology for the cross-cultural study of house architectures. This criticism arises from the present study whereby Maya house architectures do not specifically accord with Blanton's canonical and indexical communication. The Maya house is engaged in a form of exterior, implicit, canonical communication. Considering the lack of external architectural decoration, the iconic symbolism of the house remains unknown by those unable to interpret its meaning. There is a public display of symbolism; yet, this display is built implicitly into the house architecture and forms the cognitive foundation for the structuring of the house form. Nevertheless, Blanton states that the house was "engaging in acts that serve to publicly validate its acceptance of sacred propositions held in common by all members of its cultural group, thus affirming its social linkage to a community of fellow believers, not just its current status of wealth."[107] In his cross-cultural comparative analysis, Blanton outlines five commonly observable 'canonical' signs of the Maya house:

> (1) the presence of an *axis mundi* (liminal space) that serves as the conduit from the house and its inhabitants to supernatural forces; (2) a hierarchical structuring of space use that sanctifies certain persons and/or activities through a linkage to the liminal space(s); (3) other patterns of differential space use or spatial concepts that link zones of the house to gender and/or generation, based on concepts like left-right symbolism and ideas of purity and danger; (4) the use of geomantic concepts in house placement, layout, and orientation that attempt to maximize access to beneficent forces in the environment; and (5) the presence of household shrines or similar features that symbolically express ideas of household solidarity and continuity. The shrines in question physically manifest the connection between members of the household and their specific ancestors; this is like an *axis mundi*, except it is specifically a household shrine.[108]

In a misreading of Maya houses and their semantic significance, Blanton surmises that little canonical expression of cosmological principles was held in Maya houses, preferring to portray canonical communication as linked to social status borne out of participation in public ritual.[109] Furthermore, he states that Maya houses lack 'internal domestic symbols of household solidarity and continuity' and minimise indexical display in interhousehold communication.[110] Blanton's statement highlights the general lack of understanding, and research, of the semiotic function of Maya houses by Mayanist scholars in the region. The current investigation has attempted to illustrate the deep pan-Maya semantic associations underlying the configuration of the physical form of *casas de paja*, which seemed to structure much of Maya daily life, beliefs and practices. Freidel, Schele, and Parker concur:

> Modern Maya live in a metaphysical, philosophical, and religious tradition bridging the ages, from the time of the Classic kings to the shamans and ritual leaders of today; from sovereign states of old with their huge royal capitals embracing tens of thousands to the villages and small towns that now encompass the lives of most Maya. The very persistence of these traditions implies that the Maya of antiquity were unified in their vision that embraces and accommodates social differences and inequalities have to be informed by a limited number of central ideas that everyone can comprehend. These ideas must be universal enough that all who adhere to the tradition conceive of themselves as belonging to one substance and nation through their shared understanding of the nature of reality.[111]

Conclusions

In conclusion, this chapter has shown, in a similar manner to the findings from the previous chapter, that a regional analysis of material elements within the houses documented furnishes evidence of a common pan-Maya belief system underlying the configuration of traditional house architectures. The chapter has shown that the physical form of traditional *casas de paja* were, and still are, a direct reflection of the celestial events, which are understood through ethnohistorical accounts and epigraphic interpretation of pre-Columbian hieroglyphic texts, and are representative of the Maya Creation story. Archaeological evidence supports this position in showing that pre-Columbian temple and palace complexes share the same semantic affiliation in their physical planning. Additionally, the chapter has shown Maya *casas de paja* to be as equally important to ancient and at times present

Maya customs in referencing the same cognitive schemata as the major architectural monuments so valued by Mayanist scholars and archaeologists. Anthropological evidence has demonstrated that the same schemata was (and still is in some locations) utilised to plan agricultural fields, settlement patterns and domestic altars within the home in a layering of concentric levels of meaning reaching from the smallest detail in the domestic environment through to the universal, as seen in celestial events.

Through empirical research, via interviewing traditionalist practitioners, the author has determined that the principle material devises in the house, which signify this socio-religious philosophy, are the four main structural columns or corners of the house and the three-stone hearth observed in the majority of houses recorded during the survey. It could be argued that the semantic significance of the four columns has led to a predominance of square and rectangular house plans in the region, as they represent the all-important four cardinal points of the Earth's surface. As far as could be ascertained by both the current author in and Wauchope, there are no circular plan forms in the Maya realm, illustrating the numeral significance of four (shamanic evidence suggests four means stability with tables, animals etc sharing four legs). Furthermore, the chapter provided evidence that the three-stone hearth has astrological significance. As frequently discussed in ethnohistorical literature, the hearth relates symbolically to the three stars of Orion in Gemini that, historically, embodied the Place of Creation out of which the invisible fifth column or *axis mundi* rose to support the sky-roof of the House of the North (Up), the Universe.

Moreover, through a comprehensive literature review, the chapter has highlighted that there were other readings of semantic significance possible in Maya house architectures. For example, Vogt's work with the Tzotzil in the 1960s illustrates the link between the house and the human body – the owner-occupant and the soul of the house. Wauchope in the 1930s reports a similar phenomenon among Maya houses in Guatemala. Due to limited access and numbers of living examples of Maya houses, the current investigation was unable to expand upon this level of detail; such associations would be one of the main foci of further research.

The chapter concluded with a discussion of architectural semiotics in order to underline the importance of non-verbal communication when researching architecture in a cross-cultural context. Significantly, the chapter discussed a number of methods by which architecture communicates specific meanings through its form. While not expressing its underlying semantic significance in an explicit manner through the use of physical decoration, Maya *casas de paja* still communicate a message, albeit implicitly. Potentially, the problem for any architectural researcher in a cross-cultural context arises when one is not indoctrinated into the local belief system, and is therefore unable to read or understand implicit meanings, if present, in the architectural form.

A review of Mayanist literature in the fields of archaeology and anthropology has shown that no scholar, until the present investigation, has ever attempted to understand the semantic link between belief and house form in a comparative pan-Maya analysis. As presented above, only Vogt in *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals* investigated the semantic association between Tzotzil belief and the physical form of the traditional house, yet he did not attempt to comparatively analyse its significance against other Maya groups. Surprisingly, even Wauchope with his physical analysis of the house form of six language groups did not investigate nor make any observation as to the semantic associations underlying traditional *casas de paja*.

Utilising the scholarly works of others in conjunction with the author's empirical research, this chapter has proven that Maya *casas de paja* reflect the Maya Creation story, which itself echoed celestial events in the heavens. However, the current comparative analysis is merely the beginning and requires more detailed investigation in order to arrive at a better understanding of these pan-cultural belief systems and their relationship to house architecture. Notably, the observations presented in this chapter illustrate the importance of investigating Maya house architectures cross-culturally and demonstrate that the material form of the pre-Columbian Maya house was used to publicly acknowledge a widely understood customary belief system. Consequently, the repetition of house form illustrates an individual's connection to a communal belief system. Yet, at this point, questions arise as to how such traditional belief and knowledge systems have fared when faced with powerful, transformative influences, leading to the discussion of architectural transformation in the subsequent chapter.

Endnotes

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[4] R.L. Roys, *The Book of Chilam Balam of Chumayel* (Washington: The Carnegie Institution of Washington, 1933), 170.
[5] Ibid.
[6] J. Watanabe, "In the World of the Sun: A Cognitive Model of Mayan Cosmology," *Man* 18, no. 4 (1983): 713.
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[8] Ibid., 58.
[9] A. Demarest, *Ancient Maya: The Rise and Fall of a Rainforest Civilization* (Cambridge: Cambridge University Press, 2004), 182.
[10] B.C.C., Personal Communication, 16.08.02
[11] E.Z. Vogt, "Tzotzil of Zinacantan," in *Encyclopaedia of World Cultures* (1996), 294.
[12] D. Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*, 2nd Edition ed. (New York: Simon & Schuster Inc., 1996), 16.
[13] L.M., Personal Communication, OKMA, 05.07.02
[14] E.Z. Vogt, *Zinacantan: A Maya Community in the Highlands of Chiapas* (Cambridge, Mass.: Belknap Press, 1969), 84.
[15] R. Wauchope, *Modern Maya Houses: A Study of Their Archaeological Significance* (Washington D.C.: Carnegie Institution of Washington, 1938), 117.
[16] B.C.C., Personal Communication, 16.08.02
[17] B.C.C., Personal Communication, 16.08.02
[18] R. Carlsen, Personal Communication, 09.11.05
[19] E.Z. Vogt, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals* (Cambridge: Harvard University Press, 1976), 58.
[20] Ibid.
[21] Ibid.
[22] B.C.C Personal Communication, 16.08.02.
[23] J.A.M.M. Personal Communication, 07.08.02.
[24] B.C.C Personal Communication, 16.08.02.
[25] Vogt, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals*, 55.
[26] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*.; K. Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple," in *Function and Meaning in Classic Maya Architecture*, ed. S.D. Houston (Washington D.C.: Dumbarton Oaks, 1998).; and Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*.
[27] Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*.
[28] Roys, *The Book of Chilam Balam of Chumayel*.
[29] A. Recinos, *The Annals of the Cakchiquels* (Norman: University of Oklahoma Press, 1953).
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[31] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*.; Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple."; and Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*.
[32] Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*, 64-5.
[33] Ibid., 63-4.
[34] Ibid., 61.
[35] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 108.
[36] Demarest, *Ancient Maya: The Rise and Fall of a Rainforest Civilization*, 182.
[37] The flood which ended the second cycle and initiated the third meant that the realm of the Hero Twins was underwater, thus the sky (cosmos) touched the sea (the Otherworld).
[38] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 61.
[39] Ibid., 111.
[40] Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*, 21.
[41] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*.; Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple."; and Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*.
[42] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*.
[43] Ibid., 66-7.
[44] Ibid., 92.
[45] S.D. Gillespie, "Maya "Nested Houses": The Ritual Construction of Place," in *Beyond Kinship*, ed. R.A. Joyce and S.D. Gillespie (Philadelphia: University of Pennsylvania Press, 2000), 145.
[46] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 53-5.

[47] Ibid., 76.
[48] Ibid., 92.
[49] Ibid., 112-13.
[50] Ibid., 97.
[51] Ibid.
[52] Ibid.
[53] Ibid., 102-03.
[54] Ibid., 114.
[55] Ibid., 113.
[56] Ibid., 111.
[57] Ibid., 112.
[58] Ibid., 63.
[59] Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*, 63-4.
[60] Gillespie, "Maya "Nested Houses": The Ritual Construction of Place."; Vogt, *Zinacantan: A Maya Community in the Highlands of Chiapas*. & ———, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals*.
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[62] Ibid.
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[65] L. Schele and D. Freidel, *A Forest of Kings: The Untold Story of the Ancient Maya* (New York: Quill William Morrow, 1992), 427.
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[67] A.M. Trevelyan and H.W. Forbes, "The Gendered Architecture of Uxmal," in *Ancient Maya Gender Identity and Relations*, ed. L.S. Gustafson and A.M. Trevelyan (London: Bergin & Garvey, 2002), 114.
[68] B.C.C., Personal Communication, 16.08.02
[69] Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple," 456.
[70] See Gillespie, "Maya "Nested Houses": The Ritual Construction of Place."; Vogt, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals*.; and (Sosa 1989).
[71] Gillespie, "Maya "Nested Houses": The Ritual Construction of Place." and Demarest, *Ancient Maya: The Rise and Fall of a Rainforest Civilization*.
[72] Gillespie, "Maya "Nested Houses": The Ritual Construction of Place," 143.
[73] Ibid.
[74] Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple," 428.
[75] Gillespie, "Maya "Nested Houses": The Ritual Construction of Place," 143.
[76] Vogt, *Zinacantan: A Maya Community in the Highlands of Chiapas*, 461.
[77] Ibid., 465.
[78] ———, *Tortillas for the Gods: A Symbolic Analysis of Zinacanteco Rituals*, 59.
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[80] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 57.
[81] Ibid., 51.
[82] Tedlock, *Popol Vuh: The Maya Book of the Dawn of Life*, 236.
[83] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 65-7.
[84] Ibid.
[85] Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple," 432.
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[88] Taube, "The Jade Hearth: Centrality, Rulership, and the Classic Maya Temple," 449.
[89] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 39-40.
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[96] Ibid.: 79.

[97] Ibid.
[98] Ibid.: 87-88.
[99] Ibid.
[100] Ibid.: 88.
[101] Ibid.: 80.
[102] Rapoport, *The Meaning of the Built Environment: A Nonverbal Communication Approach*, 221.
[103] R.E. Blanton, *Houses and Households: A Comparative Study* (New York: Plenum Press, 1994), 10-11.
[104] Ibid., 11.
[105] Ibid., 10.
[106] Ibid., 11.
[107] Ibid., 12-13.
[108] Ibid., 80.
[109] Ibid., 190-94.
[110] Ibid.
[111] Freidel, Schele, and Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path*, 40.

VII
Maya House Transformations

An overview of pre-Columbian house architectures, while significant to the historical record, does not present the full story of contemporary Maya house traditions in Guatemala and Mexico. In order to appropriately comment on future house traditions in the study region, one must understand the conditions influencing architectural transformation. An analysis of photographic archival evidence gathered from institutions in the study region, in conjunction with Wauchope's *Modern Maya Houses*, and the current author's research findings illustrate that since the 1930s, Maya house traditions have experienced unprecedented transformations to their architectural forms, construction methods and material technologies. In taking Wauchope's publication as the starting point, this chapter seeks to understand the processes and influences underscoring the transformation of Maya house architectures over the last 70 years. The findings below are drawn from interviews undertaken during fieldwork combined with a comparative presentation of photographic evidence assembled from cultural research institutions in the study region and beyond.

Primarily, the discussion focuses on the future of Maya house traditions and investigates the processes and influences underscoring architectural transformation, as well as the advantages and disadvantages of maintaining traditional houses in comparison to newer forms of housing. The discussion combines responses from academically educated and non-academically educated Maya persons. The reason for dividing the interviews on grounds of education related to initial findings showing a disparate perception of house traditions between Maya persons based on levels of formal education received. As T.C.R. a K'ichee' man from Chichicastenango in the Guatemala central Highlands explained:

> I think I may have had the same idea as them if I had not been to university. I think that those of us who have been to university see things differently. For example, I see my people in Chichicastenango, those people who have had education try and conserve a lot now, their language, their customs and traditions, they speak in K'ichee', they partake in the customs of our ancestors, the Maya ceremonies, our *cofradías*. While the person that only went to sixth grade, middle school, doesn't have this idea. They think that the Spanish language is better and only speak to their children in Spanish so that they aren't discriminated against; I think they are committing an error.[1]

Throughout this chapter, the named informants have emerged from the academic interview stream, while un-named informants have arisen from the non-academic stream. Typically, un-named informants requested that they remain anonymous as due to recent past histories[2] they were suspicious of foreign involvement in the region.

The Decline of Casas de Paja

During the course of fieldwork it became immediately apparent that pre-Columbian Maya house traditions were still in existence in the region. Both academic and non-academic Maya informants

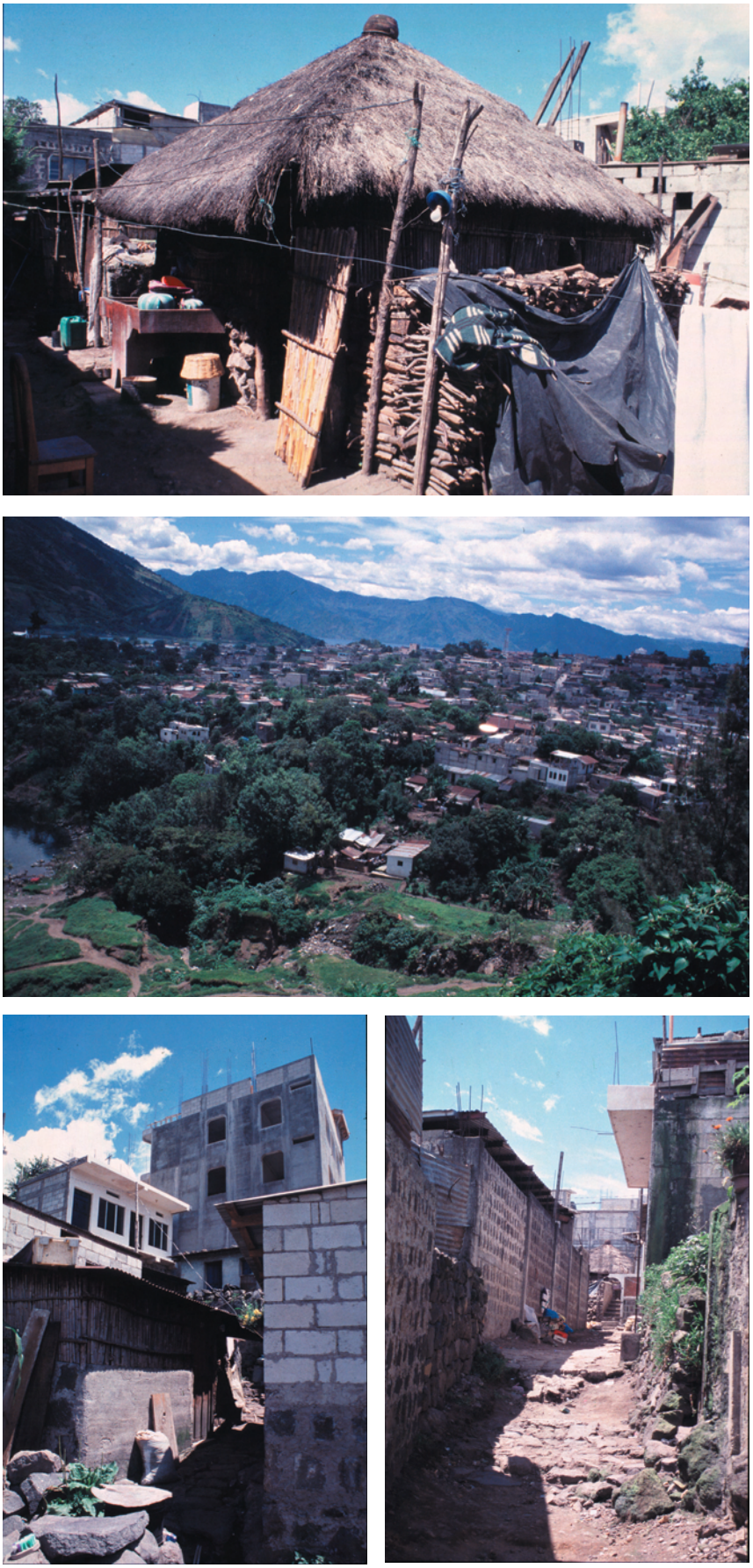

FIGURE 7.1: [top] image of possibly the last Tz'utujil house in Santiago Atitlan [centre]; [bottom left] the predominant concrete construction form in Santiago; and [bottom right] the traditional house in the background. Photographer: Davidson (2002).

were able to identify thatched houses scattered throughout the more remote areas of the southern Mexico and Guatemala as pre-Columbian in origin and significance. Respondents also agreed that house traditions were currently being replaced by other forms of house architecture, and confirmed that rural (versus urban) areas in both Mexico and Guatemala were the last bastion of traditional Maya houses. When describing diminishing traditional house numbers in the Kaqchikel community of Las Ventajas, L.M. stated:

> Yes, thatch houses are the traditional construction of the Maya peoples. Why is this the case? Well, in almost the entire Maya region these house types are found. This is diminishing but you can still find these residences in some areas. In my community of Las Ventajas you can still find some…All this time the tradition has been maintained. In many communities this is changing or has changed and the people are no longer building in this way. In the majority of urban communities this tradition has all but disappeared, therefore in most communities you won't find any, one or two in my own community. Maybe in some of the poorest areas you can still find houses of this type.[3]

Figure 7.1 presents the last reported Tz'utujil pre-Columbian house in the community of Santiago Atitlán and its surrounding region. In *The War for the Heart & Soul of a Highland Maya Town*, Carlsen declares that traditional cane and thatch type dwellings accounted for less than five percent of households in Santiago Atitlán in 1990.[4] When the author of this thesis visited Santiago in 2002, this number had fallen further with only one house remaining (Figure 7.1). The owners of the house in question were planning to demolish it in the weeks after these photographs were taken. In describing the transformation of Santiago Atitlán's built environment, Carlsen notes that McBryde previously described households in 1936 Santiago as a "compact mass of stone-and-cane walled, grass-thatched houses, many of them of the primitive, square type with pyramidal roof…built along a network of narrow zigzag, stone walled alleys that seldom approach a straight line."[5] In 1969, William Douglas found that the town still conformed to McBryde's original description, while in 1990 Carlsen observed that "though the winding stone walled alleys…remain largely unchanged, domestic architectural styles have changed dramatically."[6]

In conjunction with Wauchope's original 1930s documentation, the photographic record has confirmed the rate and process of transformation of Santiago's built environment over the last 70 years. Undoubtedly, there has been the subtle shift in building traditions in Guatemala over the last 70 years, with a major transformation occurring in the early to mid 1980s, as the archival photographs testify. The archival investigation yielded other unexpected results, described in more detail below. In 2002, the author was unable to locate any examples of the gabled thatched houses seen in the historical photographs from Santiago Atitlán (Figure 7.4). According to local Tz'utujil people this particular dwelling was the predominant house in the region until the early 1980s. In relation to the loss of traditional building practices, Maya consultant J.M. added:

FIGURE 7.2: [top] square and rectangular houses in Santiago Atitlan in the 1930s. Source: Wauchope (1938 : Plate 6); [centre and bottom] Tz'utujil family compounds in Santiago Atitlan taken by Jannethe Mathewson in 1951 and 1952. Source: Centro de Investigaciones Regionales de Mesoamerica, Antigua Guatemala.

> These changes are not good because all thatch houses have practically disappeared and with it the construction techniques. This is also happening with other elements of our identity, we are losing our own characteristics…we have to prevent these construction techniques from being lost as they are ours. This is serious because if we don't teach our children these examples from the photos (at least we have them still in the communities) the day will come when we won't see any. It is good to revise these traditions, and tell our children about it as it is our reality, a significant example of our identity and little by little it's disappearing along with our identity.[7]

This statement demonstrates the cultural heritage value placed on traditional architecture by academic persons, a view which is not held by the majority in the region today.

Casas de Paja as Symbols of Poverty

A number of respondents thought the transformation of Maya house traditions related to issues of perceived status, namely that traditional houses were viewed by the majority of Maya persons in the study region at the time of investigation, as symbols of poverty in the post-colonial era. This was explained as the result of needing to conform to the desires of the dominant cultural mainstream, the Ladino (mixed race culture), in order to avoid cultural discrimination. One interviewee L.M. saw the education system as one of the main protagonists with respect to diminishing values of traditional forms of Maya identity. He explained that when Maya children attend school, they are 'bombarded' with many things telling them that "everything Maya no longer works, and is backwards". L.M. talked about the effect this pressure to conform had on the use of language and traditional dress. "If your house is traditional it is seen as a symbol of poverty, as they say here: 'Because it's Indian'."[8] T.C.R., in an earlier interview, commented that he also thought the dividing line related to a person's level of education, stating that those people who only attained primary school level were much less interested in learning the K'ichee' language, and giving attention to other customs, such as the construction of traditional houses. He saw this as a question of social status within the community, which T.C.R. believed was more important than the poor climatic performance of newer forms of introduced housing.[9]

J.M. in a further interview, stated that people had lost confidence in their traditional houses and that thatched houses in the contemporary era were for the poor. In addition, he lamented the repercussions of losing his Maya identity such as language and traditional dress, and discussed that in change, people had become more focussed on the object of their desires, such as a new 'modern' concrete house, while ignoring attendant issues with these new house forms, such as poor climatic or environmental health performance.[10] J.M. also thought it important to maintain a link to traditional forms of Maya identity but said that it was only important for those who recognised these houses as beneficial to them. People were more likely to think highly of the traditional house if they had been educated to see the benefit of such housing.[11] He continued:

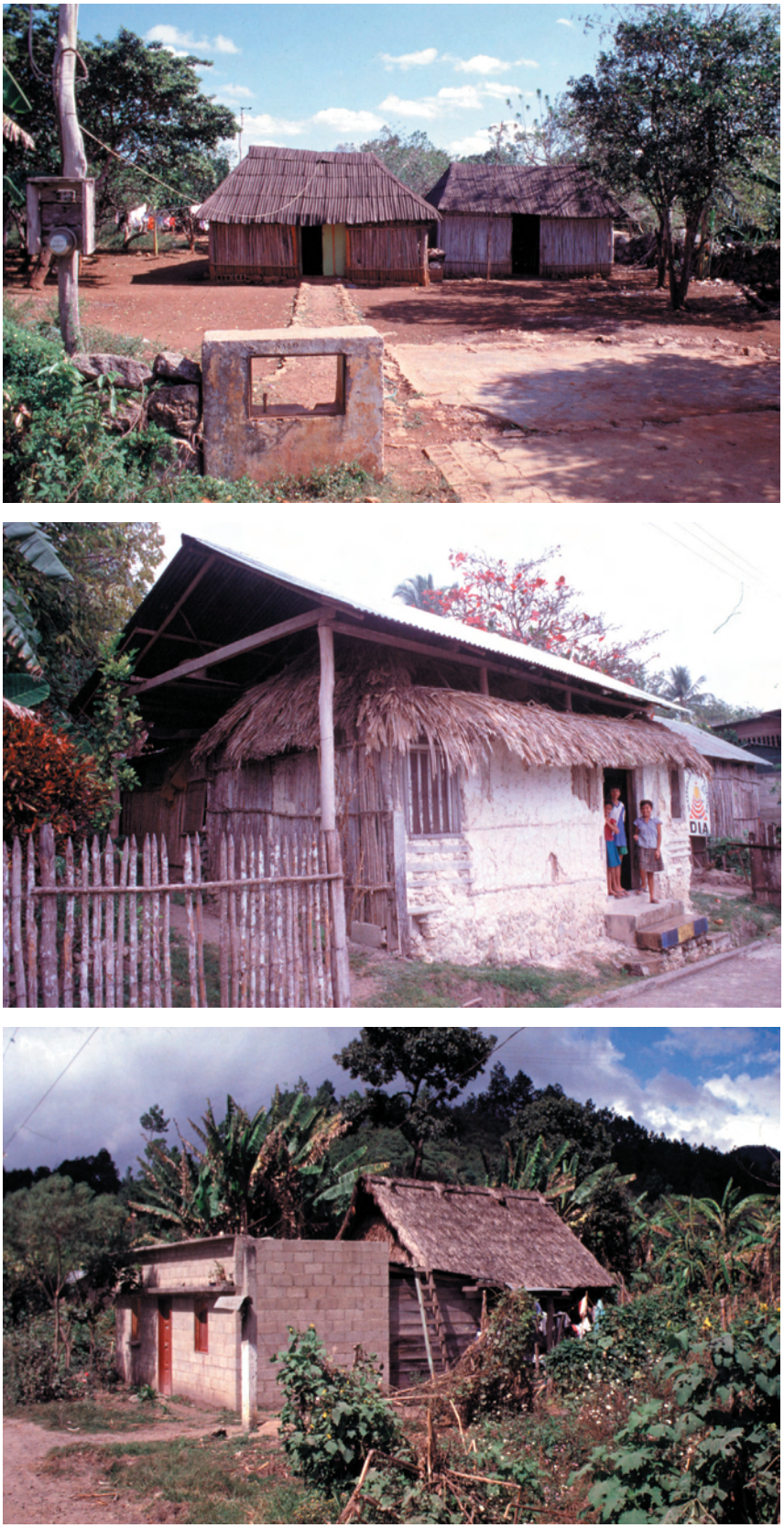

FIGURE 7.3: [top] modified Yukatek houses in Chemax, Yucatan, Mexico. Note the replacement of thatch with tin roof sheeting, and the additional electrical supply. [centre] Modified Itza' house in the community of San Jose, Peten, Guatemala. Rather than demolishing the house, the owners chose to adapt its existing structure; and [bottom] rather than adapting their existing traditional house structure, the owners of this Pokomchi' house built a new concrete and tin house aligning the street. Photographer: Davidson (2001).

> …in change people don't say, "Why don't we build a house using those design principles which improve our situation with the benefits they bring?" This sensitivity [about the application of traditional design principles] can be adopted in rural communities where change is occurring and people are well prepared. Outside these communities the majority of those people who have money prefer to have two-storey houses made of concrete block with windows of glass.[12]

In a separate interview, E.S. saw the perception of traditional houses not so much as symbols of poverty but more of an individual's choice, and not limited to the economic circumstances of the beholder.[13] A major observation that arose from fieldwork experiences related to a person's perception of themselves during moments of transition. The author found that while the economic and social situation of the family may not have improved during the transitioning process, the important thing from their perspective was that their self-perception had improved. Other respondents spoke of 'progress' and the desire of the Maya community to have the same opportunities as others, and of being seen as 'equals' rather than 'inferior'. Considering this, the majority of Maya persons interviewed, both academic and non-academic, stated that they saw no future for the traditional dwelling in its current form. By way of illustrating the diaspora of the modern house form, in 1975 in *Tradition and Adaptation: Life in a Modern Yucatan Maya Village*, Press spoke of the transformations beginning to affect Yukatek house traditions in the community of Pustunich.

> Excepting several vacant plots, all solares contain two basic structures – the living house and separate kitchen shack. Roughly thirty of the houses are completely of *maposteria* (masonry)…A majority of the houses, however, are of stick (wattle and daub) or masonry siding, but roofed with palm thatch over a peaked pole frame. The basic house, of whatever material, is a single room. Where two rooms are desired, a second, though nearly always palm-thatched house is built alongside, or a thatched lean-to is added to the existing structure. Though masonry houses are preferred, their cost (up to 10,000 pesos as compared with 1,500-2,000 for thatch-types)[14] is prohibitive for all but a few well-to-do. All-masonry homes are presently being constructed at the rate of two to three per year. Several poorer families are constructing masonry houses themselves and adding to them bit by bit as finances allow. Masonry homes are generally a meter or two wider and longer than thatch. All houses have two doors when possible. Locks are almost never utilized. Largely because of the scarcity of empty land within the town, let alone within the plaza, there is no rich neighborhood. Both wealthy and poor (often first cousins) live side by side, mud wall next to smooth stucco, scattered where inheritance, purchase, or in-aw goodwill has allotted them space. Only the poorest of the village live in mud-sided houses. Most kitchen shacks, however, regardless of the owner's wealth, are of mud and sticks, to allow the escape of smoke.[15]

Traditional & Non-Traditional Houses: Comparisons

When reporting the transformation process from traditional to non-traditional houses, most respondents compared the advantages and disadvantages evident between the different forms of housing. As noted during the fieldwork interview process, the contemporary concrete block house appeared to be the cultural benchmark for modern living. In sifting through the information gathered from

FIGURE 7.4: [top] contemporary concrete block and corrugated iron house in the Mam community of Sacatepequez, Guatemala; and [left] the rear elevation of the Mam house in Sacatepequez illustrating the family *milpa* where maize nd beans are grown. Note also the drying of maize and beans on the corrugated roof of the house. Photographer: Davidson (2001).

both academic and non-academic series of interviews, a range of positive and negative attributes concerning traditional houses were identified. Accordingly, the positive aspects of traditional Maya houses were:

- lower construction costs
- lower labour costs
- sustainability of using local materials
- post-occupancy comfort
- longevity of agricultural products and building materials

When compared to 'modern' concrete houses, the negative aspects of traditional Maya houses were:

- higher time costs
- higher long term maintenance costs
- security for possessions and self
- social perceptions
- perceived future economic value
- perceived health and sanitation

Construction Costs

While the traditional house was initially of lower construction cost, due to long term maintenance costs the expense of building a traditional house eventually became commensurate to a 'modern' concrete block and corrugated iron house. The unavailability of many local materials affected this initial cost saving, for example in Tres Cruces, a small *Sipakapense* Maya town in the Guatemalan state of San Marcos, the cost of thatch had risen to the point of it being unaffordable by most Maya farmers as a building material. The main reason for this was that thatch grass (*paja* or *pajon*) was no longer locally planted in the abundance that it had been previously, and therefore, it had to be sourced from outside the community, thus incurring transportation costs. In the majority of cases such additional expenditures proved insurmountable for the owner-builder-occupier. As a Popb'al Ti' (Popti') man explained during field interviews:

> A thatch house costs a little more now because the timber, the cypress pine isn't available like before and the thatch is no longer easily found. A thatch house costs between $500 US and $800 US while a block

> house costs a lot more like $7000 US dollars. People who have family in the United States can earn the money but the rest build adobe and tile houses that cost between $2000 and $3000 US dollars.[16]

At the time of interview, the cost involved in building a traditional Maya house varied according to region, which was generally influenced by differences in transportation costs and the local availability of materials. For instance, in the remote Highland regions of Guatemala and Chiapas the cost of transportation of materials was not conducive to using anything other than concrete block and iron. Additionally, the price per sheet or block included the cost of transportation and was passed onto the user at wholesale cost. The author was informed during fieldwork that those with family members working illegally in the United States of America could afford these increased costs, however they tended to build more substantial houses, and thus attained a higher social status in the community.

Labour Costs

Typically, the process of building a traditional house accrued less labour costs, as it was common that certain members of one's immediate and extended family, as well as neighbours, participated during construction. Yet there was a high time expenditure in locating, procuring and transporting materials to the construction site. In some senses, this demonstrates a modernist trait of efficiency in construction techniques, but at what cost? In order to build a concrete and iron house efficiently the owner paid a third party, usually a building contractor, to source and transport the building materials; this enabled the owner of the property to continue working in their current mode of employment, be it maize production or otherwise, without having to lose time procuring materials etc. Wagley in "The Social and Religious Life of a Guatemalan Village" explains:

> House-building illustrates the cohesive co-operation of an extended family of a man and his sons. The preliminary work of building the walls and the frame for the roof is done by the father and his sons. This group works at the task during their spare time for several months. When they have finished everything about the house except the roofing, they call in all their patrilineal kin, all the *compadres* (godfathers of their children), and even friends to complete the roof in one day. That night there is a fiesta with coffee, sweet rolls, *aguardiente*, and dancing to marimba music provided by the patriarch.[17]

During field interviews, when asked if they had built their own houses, all respondents living in *casas de paja* answered in the affirmative. All had built their houses with the assistance of members of their immediate family and community. Traditionally, all members of Maya communities shared knowledge of building methods and systems. When comparing this to responses of those living/wanting to live in the 'modern' houses of the contemporary era, many reported that they had little knowledge of the building process and needed to employ skilled labour when they wanted to build a concrete block and corrugated iron house.

Future Economic Value

In regards to perceived economic value, the traditional house performed poorly. All respondents stated that the traditional house had no long-term economic re-sale value whereas its 'modern' counterpart did. The perception was that a traditional house would actually depreciate in value. The traditional house was also unable to be upgraded with more contemporary materials as they became available. The general lack of modern forms of security also affected the future economic value of traditional houses.

Health

It was also reported that there was a perception that the traditional house was less hygienic than modern versions. There were many complaints of references to pests living in the earth floors and rodents, spiders and cockroaches living in the thatch roofs; which were also given as the reasons for moving into newer forms of housing. However, somewhat ironically, it was noted that such infestations were a source of concern in 'modern' concrete houses. As previously stated, the method employed by those in the traditional dwellings to deal with this problem was to throw a handful of chilli beans onto the open fire in order to smoke out the pests. A number of local informants also spoke of the effects of rusting corrugated iron with the differential diurnal changes in humidity within the house throughout the year. This matter remains to be investigated.

Domestic Environmental / Climatic Effects

There are a number of positive environmental factors underlying the construction and long-term use of a traditional dwelling. When contemplating the climatic significance of the traditional house all respondents answered that the traditional house was *mas fresco* (fresher) or more comfortable to live in than its 'modern' counterpart. Not only was it seen as more comfortable climatically but also perceived psychologically. This fact however, did not prevent the use of tin and concrete block as building materials. Residential comfort was found to vary between regions with differing climates, for example, those Maya people living in the Lowland areas where heat and humidity are major climatic stresses emphasised the climatic importance of the traditional house more so than those Maya persons in the cold, dry Highland regions. A Ch'orti' informant from Tunuco Abajo said:

> Here it is very hot, the thatch house is good for the climate and produce lasts a long time. These houses do pose a health problem because the floor is dirt and there are animals inside the house, there are many diseases, they also don't have security. It's also a lot of work to build them. Block houses are secure, are worth more in the future and it doesn't take much time to build them. The problems they have are that the metal does not last with the smoke from the fire and the maize does not last long under the metal roof because of the heat.[18]

In a further interview, V.P.M. explained that a very serious problem in Guatemala today is the inability of remaining forest reserves to supply timber for traditional houses.[19] In building thatched houses one requires timbers of many different sizes, types, and strengths. He made the point that today only weak timbers can be found, which last approximately three to four years whereas previously one could find large timbers called 'heartwood' which were much stronger and lasted between 30 and 40 years. He talked about his own traditional house, which still had the timbers he inherited from his grandparents and estimated that these particular timbers are over 100 years old with the wood still in good condition. "Therefore, in some communities the problem between modernisation and tradition exists because of the lack of good timber. Also, those people who don't have much are still maintaining this tradition but it is more expensive than before as there are no timbers found locally."[20]

Natural Environmental Effects

Two other areas of interest in the environmental significance of the traditional house involved the effect of smoke and soot on the thatch material, and the longevity of agricultural foods when stored in the ceiling space of the Maya house. Smoke from the interior hearth assists in conserving the thatch, be it grass, palm or cane leaf, while products such as maize, beans and potatoes last longer when stored in a thatch roofed house, as compared to those houses utilising metal roof sheeting. The major reason for such a short shelf life of foodstuffs in houses with metal rooves is due to the transmission of heat and lack of ventilation through the iron, which reduces the stored life of these products by two-thirds. Consequently, the resultant over-use of fertilisers in order to grow more crops significantly reduces the long-term yield of the soil and exacerbates the problem of sustainable agricultural production. Carlsen found a similar situation in Santiago Atitlán in the early 1990s:

> Virtually all Atitecos now utilize large amounts of costly chemical fertilization. Many claim that overuse of fertilizers is 'burning' the soil. Underscoring the crisis of local population growth is that despite the expansion of land under cultivation, as well as increased yields due to the chemical fertilizers, Santiago Atitlan has for some years been an importer of maize. This is in marked contrast to the situation a few decades ago, when Atitlan was the primary maize-exporting centre in the region.[21]

In a personal interview, Maya consultant V.P.M. stated:

> Another very serious problem is there are no forests left were one can find the right form of timber. To build a thatch house you need timber of all sizes but today you won't find anything. You only find timber which doesn't have any strength, timber which only lasts three or four years. Before you could find larger timbers which we called 'the heartwood', this is much stronger and can last between thirty and forty years. I have a thatch house which uses timber which my grandparents used and left as an inheritance. I could use this wood, as it is still very good.[22]

Security for Self and Possessions

One of the most widely reported undesirable aspects of the traditional house was the perceived lack of security. The traditional method of lashing building materials is not a strong deterrent to thieves, as it is relatively easy to enter through the walls in certain houses or through the thatched roof. This problem has been exacerbated through the modern-day ownership of commodities such as televisions, radios and refrigerators. The bunker-style concrete house proved advantageous when dealing with issues of security. It was common to see in Guatemala and Mexico houses built of concrete block walls and metal roofs with doors and windows of steel, such is the contemporary situation of insecurity in these regions. During the Guatemalan civil war of the 1980s and 90s home invasions were common, and traditional houses were poorly equipped to prevent these incursions, thus leading to a lack of confidence in traditional methods of construction.

When compared to modern concrete block houses, the positive aspects of traditional Maya houses were lower construction costs (although local resource decline is making this less so), being able to utilise locally available materials; lower labour costs through community participation during the construction period; greater macro-environmental significance through sustainable use of locally available materials and resources; and greater micro-environmental significance through post-occupancy comfort related to ambient comfort within traditional houses; the longevity of agricultural products within the dwelling, and the conservation of building (thatch) material due to effects of smoke. The negative aspects of traditional houses were higher time costs related to finding building materials; higher long term maintenance costs whereby thatch is replaced every eight to twelve years on average; security for self and possessions through the increased risk of theft (timber houses were easy to break into); social perceptions of status, whereby thatched houses are viewed as past traditions for the poor; no perceived future economic benefit (e.g. re-sale); and as health risks with animals living inside on dirt floors.

Connecting Traditional and Non-Traditional House Architectures

It is clear from the findings above that the future of *casas de paja* is bleak. In light of this prospect, the author began to question whether or not there may be an incorporation of traditional elements into contemporary 'non-traditional' houses. The majority of interviewees stated that while they saw change as inevitable, they thought it important to maintain a connection, either physically or symbolically, between contemporary and past house traditions. From a Kaqchikel perspective, E.S. thought the change in architectural form was not necessarily a negative issue stating that "it is not the change itself which is the problem; it's the way in which the change is affected."[23] She thought that while it was positive to have a more contemporary 'modern' house, the problem was the things people were losing unconsciously during the process. As an example, E.S. spoke of the loss of communication between parents and children in contemporary houses whereas in traditional houses

the family gathered around the fireplace in the single room house where the parents would pass on oral traditions to their children. "Now, this never happens; the children are never seen and the parents are doing other things so the environment of the house is separated – this is bad for Maya culture.[24]

E.S.' interview revealed that houses were thought of as simple physical responses to the social and natural environments in which they exist. When discussing architecture's ability to reflect the ideas and values of the time, the architectural philosopher Rykwert states that "any change in the way of life, any shift in the interpretation of history or new development of cosmology create so different an historical condition that even the short passage of time between two generations forces a revaluation or, at least, a restatement of existing theory."[25] Thus, the changing socio-political environments of Guatemala and Mexico have led to transformations in traditional building values, practices, language, dress and religion. In touching on the relationship between contemporary house design and Maya 'traditionalist' cosmology, the interviewee L.M. asserted:

> In the houses we have been discussing [traditional] the fire is located on the floor; this is a very important concept for us because it involves Maya cosmology. The three stones that form part of the fireplace are part of our creation story. The belief is that the stones represent three stars in heaven; this is seen in the triangular formation of the rocks and is the reason we all sit around the fire to eat where we are therefore able to talk, parents and children together. The modern form of stove brought by a number of different aid agencies influenced this change because they have the stove by itself and then a table where the family goes to eat. Therefore, I agree with the modern but see that we are losing many things and this is bad for the culture.[26]

During further discussion, L.M. affirmed that in periods of acute socio-economic change little attention was given to the concomitant processes of cultural and architectural change. The pursuit of the 'modern', as the progressive, had largely led to a cessation of past cultural practices. He saw the architectural organization of the 'modern' households as negatively influencing the breakdown of familial communication and kinship structures, and stated that while the traditional dwelling was configured with the living, dining and sleeping areas in one large room, the separation of rooms in contemporary housing disturbed the customary balance of familial relationships. L.M. argued that the change in building form and layout has been harmful to the continuation of oral traditions by not being configured to support traditional behaviours such as sitting around the fireplace, which in traditional houses gave parents the opportunity to discuss daily issues and imbue their children with stories of the past. As discussed in Chapter 6, the fireplace holds great cultural significance, with the act of sitting and encircling the fire signifying the connection between the earth and the heavens with humans as the conduit – acting out and reinforcing one's belief system.

When asked about the continuation of traditional sociospatial behaviours and contemporary building

practices, anthropologist Robert Carlsen, a long time resident and scholar in Santiago Atitlán voiced, in personal communication with the author that it depended on an individual's personal circumstance.[27] Carlsen made the point that due to the low percentage (perhaps as low as one percent) of active *costumbristas* (traditionalists) in the local Atitlán population, there were no visible manifestations of continuing sociospatial behaviour in contemporary Tz'utujil houses. Carlsen stated that although the costumbristas comprised only a small proportion of the total population, they still managed to wield a disproportionate amount of influence in local social affairs; this was in recognition of their former dominant position within the community. When asked about the semantic significance of contemporary building practices, Carlsen related that with a few exceptions, virtually all *costumbristas* now live in block houses.[28] He continued:

> Some *costumbristas* today definitely attach Jaloj-K'exoj significance [discussed later in this chapter] to their block houses. One example that comes to mind is Nicolas Chiviliu, the nabeysil of Cofradía San Juan (Nicolás is pictured on page 81 of *The War for the Heart and Soul*…). He and I, along with Vinny Stanzione, have had explicit discussions about the symbolic significance of the structure of his house. Central to that structure is the underworld, prominently signified by the space under his *costumbre* table, and the thirteen sacred points of the house. Other *costumbristas* are not so open about discussing this sort of thing. In many cases I suspect that those individuals are not too concerned any more about such considerations. This can change when a *costumbrista* takes on a *cofradía*, hence transforming his house into a shrine. At that point the sacred symbolic structure of the building can regain importance.[29]

In a further interview, E.S. maintained that the conscious decision to accord with enduring sociospatial traditions related to whether or not there were older people involved in the decision-making process.[30] When older people were present they are more inclined to place pressure on younger members of their family to keep their traditional practices, whereas in places without an older population there was a different outcome. E.S. stated that her house was not a traditional house, however, due to her grandfather's involvement in the design, the family conserved many of the old sociospatial patterns from their previous traditional dwelling, and that now he had passed on (at the age of 98), her mother continued to follow in his footsteps, conserving and being conscious of the old ways. E.S. continued that the construction of their 'modern' house was the idea of her father and grandfather, and it was built to appear as a Ladino (non-Maya) house so they would avoid discrimination for being Maya. However, she made the point that even though the house appeared as a Ladino house on the outside it had strong remnants of Maya social patterns in the interior.[31] E.S. said that one of the major differences between their old and new houses related to the interior spatial division of rooms. "In our house there was a division between the dining room and kitchen, which sometimes made me laugh because my father would eat in the dining room whereas we would eat around the fire. He wanted this, therefore it is for this reason I say it depends on how things are conceived."[32] E.S. illustrated that avoiding discrimination was the underlying reason for her father's push for his children to live a Ladino lifestyle, while her mother's position related to conserving traditionalist practices as much as

possible. In sharing these thoughts, E.S. stated:

> In this case, I can't say that my father wanted to change us from Maya to Ladino, he just didn't want us to suffer what he suffered. He used to say, "When I went to school I couldn't speak Spanish so they hit me as I couldn't pronounce the words". They castigated him as he couldn't read or write in Spanish, as the Kaqchikel Maya during this time were almost all monolingual. People would cheat you when you tried to sell them maize because you couldn't speak Spanish. Remember, we are only talking about eighty kilometres from Guatemala City, this is why he said, "I don't want you my children to live the way I lived, and I suffered too much. If you don't learn Spanish they won't support you in school, you won't develop relationships with others, you won't find work etc." He saw difficulties for us if we didn't learn Spanish so we were introduced to the Ladino way of life. He did everything he could, including building our house so that it looked like a Ladino house. The idea was to introduce us to an environment that didn't work against us later on.

> My mother was a lot more conservative in these aspects. Therefore, my sisters and I are what my father wanted us to be but also what my mother wanted to conserve. My father wanted us to be able to defend ourselves in Spanish but not forget our own language. We've never forgotten it but he never directly taught us either. We grew up between someone who wanted the modern, the Western, so we wouldn't suffer, and my mother who wanted us to maintain the Indigenous person inside us, the other part. Therefore, the influence of my parents and grandparents is very strong. We are a combination of the two. This is a personal experience and I can't speak for all Maya people in saying they are the same. It's not that you want to forget the past, our experiences are the reason we say, "it's better we change". We have to take into account that, "yes I speak Spanish, this means that I am now totally part of the Ladino culture, I am Ladino", this is simply not true.

In a further interview discussing changing and enduring sociospatial patterns, T.C.R. articulated that in his view, the type of house was not important, as Maya peoples naturally continue with customary forms of behaviour, even when living in a 'modern' house.[33] In recounting the story of his family's change from living in a traditional K'ichee' timber house to a modern concrete block and tiled roofed dwelling, T.C.R. recalled that even though they lived in a modern house, they still persisted to use the kitchen of the old house for a long time. The traditional house supported the cooking practices of the family (around the open fireplace and hearth) whereas contemporary forms of housing did not, requiring most families to construct traditional kitchen houses adjacent to new houses. Furthermore, the traditional three-stone hearth continued to serve as the central focus for family gatherings. T.C.R. remembered that at this time his father bought a table for six people 'with very nice seats' however the family never used it, preferring to sit on the floor around the fire during meal times.

> We felt more comfortable on the floor. But the problem was that the fire made things inside the house black with the smoke. Later I remember my mother saw a house which had a better stove, it had a chimney and she decided that we could have the same. To us when we were children we never saw the problem. We changed the stove so we could use it as a table – all of us sitting around without losing the custom of

> us all surrounding the fire. I also remember the first stove we had was made completely of adobe blocks. Now we have a very modern one of course with nice tiles, things have changed again. I think that in Chichicastenango today and in other towns a small number of people still cook on the floor.[34]

In discussing enduring values, T.C.R. declared that in his view, the traditions that have been conserved in contemporary houses are the ways of sleeping, eating, dressing; the way extended families still live together; and the method of storing grain inside the roof cavity of the house, whether the house is adobe or concrete block. He stated that until two years prior to the interview his mother had still stored her grain in the traditional manner, however, she now uses an American style silo as the grain lasts longer, even though it requires more maintenance in its upkeep.[35] Although there was a recognition of the fact that change was necessary in some instances, the majority of interviewees lamented the loss of certain fundamental social behaviours in the transition from traditional to 'modern' houses. The discussion above has revealed that experiences associated with, and perceptions of, the transformation process are not consistent throughout the Maya realm, depending on the family's economic situation, its local and regional cultural context, education levels attained within the kinship structure, as well as direct and indirect experiences of discrimination from the dominant culture outside the immediate family context, which results in changing house type.

Transformative Processes & Influences

When asked about the loss of traditional houses, the majority of academic and non-academic respondents answered that these changes were a 'good thing'. This opinion was qualified by the view that all thought house traditions should be respected through the recording of their architectural form for future generations of Maya and non-Maya peoples. One of the more interesting recurring responses focussed on the fact that change was only good for those people *"que tienen recursos"*, who have resources, that is have good economic standing. As illustrated above, the predominant reason for continuing to live in a traditional dwelling at the time of writing was poor economic status, and not having the money to buy new materials. A number of respondents answered that poverty was one of the most pressing issues facing the contemporary Maya community, and expressed a strong need for housing that worked on all levels, from climate to social status to security to economy. Change was viewed as positive as people felt like progress out of poverty in their lifetimes. In answering in which year or era was there definitive change to the local building traditions, the Guatemalan Maya interviewees responded in an emphatic manner, identifying the era of definitive transformation of Guatemalan Maya house architectures as being in the early 1980s. In Mexico however, the era of change was one of a longer period with the majority of Mexican Maya interviewees answering that change began to occur throughout the 1960s and 1970s. Potentially, the rate of architectural change was slower in Mexico than Guatemala, due to a longer history of cultural transformation and more stable political circumstances, as indicated by the informants in the following section of this chapter.

Influences & Influencers of Maya House Transformation

When asked as to the influences of the architectural change processes in Guatemala, one of the most common and immediate responses among interviewees was that there were two main occurrences that had directly influenced building change over the last 25 years, being the 1976 earthquake and the ensuing 28 year civil war beginning in 1978. The author observed that in different geographical regions, there were some differences of informants' responses. For example, in the Highlands area of Guatemala, most responses noted the effects of the earthquake and the ensuing civil war, while in the Midlands and Lowlands regions, respondents identified population pressures and deforestation respectively as markers of change. Both emigration and changing social values through family members working (both legally and illegally) in the United States influence Mexican and Guatemalan contexts and the economic values of such employment and local perceptions of status of those with family abroad affect housing change. Further, evolving technologies requiring great levels of education and knowledge of alternative farming practices; religious transformation through the growing influence of non-traditional religions such as Protestantism and Evangelism; directed change via government and non-government 'aid' agencies; and an individual's personal choice to affect change in their own building practices and lifeways all influence Maya house transformation. The following quotes illustrate the reasons for change, as described by non-academic respondents during fieldwork in Guatemala:

> It was a change of thinking on the part of the Maya people. The *kabiles* [Government military] during the war burnt the last remaining thatch houses, now there's none left. (Awakatek, pers. comm., 04.06.02)

> My children didn't want to continue living in a thatch house because it means 'poverty' and they wanted to be modern. The reason for the majority of the change was the war and the arsonists. (Kaqchikel, pers. comm., 02.07.02)

> The population grew during the war years and people needed to plant maize in place of grass (thatch); before the fields were full of grass, but now there is not much left because of this. The violence, the war, was the major reason for this. (Q'anjob'al, pers. comm., 25.05.02)

> It was a change in thinking. The war didn't have much influence here. My daughters wanted me to build a concrete block house because they didn't want to live in a thatch one anymore. Things were difficult for me as my mother wanted to continue living in the traditional house, this is the reason we have both. The thatch house was the first and the concrete one came later for my girls. (Kekchi', pers. comm., 31.05.02)

> The war, and the Government was giving away five sheets of iron for every five hundred pounds of cement we brought up the hill from Antigua. They were building the communications towers. The war was really the major reason for change here in Santa Maria. (Kaqchikel, pers. comm., 02.07.02)

> The military put mines in the fields where we grew our maize and thatch. This means that no one now is planting thatch. If we had more thatch more people would be building, my dad and my grandfather built this house fifteen years ago. (Tz'utujil, pers. comm., 01.07.02)

It could be garnered from the interviews that the 1976 earthquake contributed to civil tensions and subsequent civil war leading to extreme violence, the dispossession of land, environmental degradation, population pressures through the lack of availability and high cost of local resources, as well as an influx of foreign and local government directed housing initiatives. Each of these influences will be examined separately in the next section below.

Natural Disasters and La Violencia

One of the most consistent answers to the loss of traditional houses from both academic and non-academic Maya peoples alike related to the earthquake of February 4, 1976, which killed more than 23,000 people and left more than 100,000 homeless in Guatemala (Figure 7.5).[36] Earthquakes were seen as a bad omen for the Maya, and, as Victor Montejo states in *Voices from Exile*, the belief is that "the corn as 'mother' contained the spirit of abundance...[the power of the earthquake] can swallow the spirit of the corn, bringing a shortage, and consequently hunger for the following year."[37] E.S. asserted that there was a great change to adobe and thatch traditions in the Guatemalan Highlands after the earthquake, which eventually led to the cycle of violence and the subsequent Guatemalan civil war which during its 18 years from 1978 to 1996 left more than 150,000 people dead, and some 50,000 missing, most of them Maya civilians. It was her opinion that the majority of dramatic changes to traditional houses occurred during the period called *La Violencia*. Changes in the years after the war were slower and subject to other influences.[38]

> For me these changes were strongest during these times. We can see that due to the earthquake the head municipalities of each region built housing made with tile roofs, in contrast to those rural areas where the housing was thatch. In the head towns themselves the thatch tradition definitely finished after the earthquake. In those rural areas where the tradition still existed after the earthquake, the tradition was finished by the violence of the civil war. The violence eliminated those houses left after which the owners no longer rebuilt this type of construction. There are very few left now.[39]

A.D., a non-Maya of Ladino heritage, saw a great change after the earthquake where a large majority of traditional houses in the central and western region of Guatemala were basically destroyed.[40] "When the people went to rebuild nothing was the same, they used concrete block construction instead thinking it was more suitable."[41] A.D. also attributed the Guatemalan government and foreign aid organisations as leading re-education programs encouraging people not to continue building these forms of housing.[42] While the earthquake served to exacerbate growing social tensions between the Maya and the ruling Ladino elite, these tensions escalated into civil violence in 1978, which continued unabated until the Peace Accord was signed on December 29, 1996. During the 18 years of the civil war, the Guatemalan military had a 'scorched earth' policy whereby all public and private buildings in resistant Maya communities were destroyed. Houses were the first buildings razed typically by

FIGURE 7.5: Guatemala Earthquake 1976. Part of the village of Subinal, 7 kilometers west of El Progreso, showing destruction of adobe structures near the Motagua fault trace. The fault is a broad zone of ground cracks that cuts diagonally across the lower right corner. Source: U.S. Geological Survey Professional paper 1002, Figure 28, 1976.

fire in an attempt to destroy Maya cultural beliefs and their maintenance of time-honoured building traditions (see Figure 7.10). This intimidation involved the elimination of 440 Maya communities and forced the displacement (internal and external) of hundreds of thousands of Maya peoples.[43] Montejo provides the testimony of a 50 year old woman who survived a massacre in 1982:

> …because our houses were on the edge of the road, they started by setting them on fire. While the houses were burning, the people who were sleeping felt the heat and fire falling on them. Then when they jumped up and ran outside, the soldiers were right there, ready to kill them as soon as they got outside.[44]

The 20 year civilian uprising, or *La Violencia* as it is commonly called, was largely limited to the highlands region of Guatemala. Moreover, this region was an area that had maintained stronger traditional expressions of Maya identity than other parts of Guatemala at the time. The burning of the traditional dwelling, with its thatched roof was used symbolically by the Guatemalan military to represent the destruction of Maya cultural identity. It is possible to see the traditional dwelling as a symbol for change. Thus, recognising the importance of investigating the influences affecting its transformation from a timber structure, which utilised local building materials for the last millennia (conservative estimates are 1000 years), to the concrete block and corrugated iron dwelling, which at the time of writing had been in existence in Maya communities for the best part of 20 years. Carlsen presents the situation in Santiago Atitlán during that period and illustrates the direct effect which the violence had on the maintenance of thatch traditions:

> Throughout the 1980s the consequence of an Atiteco's being caught on the mountain by the soldiers, even if there just to plant maize, tended to be torture followed by execution…Because of this situation, not only have numerous Atitecos been denied access to their milpas, hence to what may be their primary means of livelihood, but the townspeople's access to certain mountain products has been affected as well. The effects have ranged from escalating prices for firewood and dugout canoes to increased pressure to abandon the traditional thatched roofs.[45]

Environmental Degradation and Population Pressures

Further influences of house transformation, indirectly linked to the Guatemalan Civil War, were the population pressures, and resultant environment degradation due to the influx of internally displaced people into regions not directly affected by the war. While the war resulted in the destruction of traditional housing through deliberate acts of arson, it was also responsible for the internal and external displacement of people (refugees) from hundreds of Maya communities. This dispossession of land placed excessive strain on the populations and resources of other Maya communities. The continual flow of internal refugees into such areas created an imbalance in the social structures of those areas to the point where food production suffered for those who were initially unaffected by the war. In the Q'anjob'al Highlands region of central Guatemala, grass (thatch) production was interrupted due

to the need to plant maize for the burgeoning population. Military involvement in the neighbouring Ixil lands caused people to migrate to the Q'anjob'al lands thus increasing the local population and placing undue strain on resources in that area. To cope with the influx of people, the Q'anjob'al were left with no choice but to interrupt the production of grasses for thatch in order to plant maize for food, resulting in more expensive thatch being transported in from areas outside the local region. More expensive thatch resulted in less usage, and greater reliance on other forms of construction materials. This process has continued to the present day and has resulted in the breakdown of the thatch building tradition in many areas.

Social Perceptions of Status

One further aspect of the traditional house change was how it was perceived socially within the Maya community. At the time of fieldwork, these dwellings were regarded as existing outside cultural progress and achievement, viewed as belonging to the poor, being *atraso* or backwards. In this sense the traditional house served to denigrate those whose only recourse was to continue living in such a 'backward' dwelling, thus lowering their status within the wider Maya community; as T.C.R. stated:

> ... it's better to have a house of concrete and tin or tile in that you are able to say that you have a higher societal position and that you have money, and as such society sees you differently. Initially I said that I believed the thatched house was the tradition, this was because it was done by hand, it was easier to cut thatch and build the house without any trouble. But as work experiences have grown, people have conformed and begun to change.[46]

Of further interest was that no matter how climatically uncomfortable people were in their 'modern' house, they stated that they were still happier because in societal terms they had attained a level of 'success' in owning a 'modern' Western-style house; thus, psychological perceptions of status and social accomplishment outweighed personal comfort. As N.S.I. explained in a personal interview:

> The advantage of the more contemporary 'modern' house over the traditional house is that it takes away the stigma of "poverty, dirty and conformity" among others, because there are families that build more comfortable houses similar to the Ladinos and maintain their Maya identity. In remote communities away from urban centres there are many traditional Maya houses, however, poverty is evident there because of the diverse problems they face.[47]

When both academic and non-academic people were asked if they desired to live in a traditional house in the future, *all* indicated they would prefer to live in a 'modern' house rather than the traditional thatched house. All acknowledged that while traditional houses were more climatically comfortable than 'modern' houses, the socially-acceptable concrete house was their dwelling of choice even though they felt comfortable in their old house (see Figure 7.3). A further perceived problem with traditional

houses related to thatch and timber burning easily while concrete block and metal roof sheeting were seen as relatively fire resistant (Figure 7.6). T.C.R. continued:

> For example, my situation, when we were small children, we had a house of timber and corrugated iron but little by little we changed to an adobe and tile house. The reason for this was that when we were walking in the street we would see the school and all the other different types of houses and later when you travel you notice that your house is completely different. My dream was to have a house of two levels. I said, "the day I marry, I'm going to build a two-storey house of concrete with colonial decoration and a few other things". For me the reason was not so that my community saw me on a higher level no, it was for comfort. I like luxury. One other reason is that I have lived many years outside Guatemala, a long time in the United States, so my concept of house has completely changed. I said, "If they can live like this, I too can live like this", this was my idea.[48]

At the time of interview T.C.R. was a 31 year old K'ichee' Maya who moved to the United States as an illegal immigrant in his late teens. He travelled through Mexico, traversing the Sonora Desert, and arrived at Brownsville, Texas, where he crossed into the U.S.A. His main reason for going to the U.S. was to make enough money to be able to return to Guatemala where he could then study and win a scholarship to return and study in the United States. He saw no value in building traditional-style houses, and it was not important to him that houses exhibit a Maya cultural identity. However, he did state that other things such as language, dress and religion were important to maintain. He was also involved in the local *cofradia* system, the traditional authority and governing system in the town, linked to traditional practices and beliefs. T.C.R. recalled that while people understand that a thatch roofed dwelling is better environmentally, being cooler in summer and warmer in winter, they are willing to forego this comfort in place of a greater sense of social status within their community. He stated that even though people understood this, they choose to ignore it, believing "to make a change is much better than what we had in the past".[49] His experiences in the U.S. definitely influenced T.C.R.'s decision regarding maintaining a traditional house. As he said in his interview: "If they can live like this, I too can live like this". T.C.R. said that the reason he chose to build a two-storey concrete house was one of comfort with social status being important for others but not necessarily for him and his family. His position regarding traditional houses was that they were simply a past tradition, which needed to be acknowledged but did not need to be revitalised.

Changing Technologies

A number of interviewees were asked to comment on the historical images gathered as part of this thesis investigation. T.C.R. believed changing building techniques and methods were the principle catalyst for changing domiciliary practices over an extended period of time.[50] When comparing the photographs from 1875 and 1886 (see Figures A3.10 & A3.11 Appendix A) T.C.R. saw the gradual influx of iron sheeting, beginning in Guatemala over 100 years ago, augmented by European foreign immigration which brought new technologies as one of the major influences of building change.

Analysis of photographic archives at the Centro de Investigaciones de Mesoamerica (CIRMA) in Antigua Guatemala illustrated that change to the traditional architectural genotype began in the late 1800s. In T.C.R.'s opinion, it was evident that Guatemala's political process and the influx of globalisation and the market economy was inextricably linked to the loss of pre-Columbian house traditions.[51]

Maya consultant L.M. presented another opinion in stating that he thought changing technologies were not always advantageous.[52] He observed that the traditional method of storing maize inside the roof cavity of the house increased the longevity of the produce more so than if it was stored under corrugated iron roof sheeting. He discussed issues related to the lack of education in using modern technologies, and gave the example of a child who lost his eye after having drops of rusty water fall into his eye during the night from rusted corrugated iron. "From my own experience for example, we lived in a thatch house and after we had a corrugated iron house. In the iron house we didn't have a false ceiling the effect being that during the night it drips condensation as well as it being hot inside. After this we looked for solutions so we put up a nylon ceiling so it stopped dripping, but the heat was still too much."[53]

Religious Influences

Another common reason given for the transformation of house architectures was the influence of foreign religious organisations. By encouraging the transformation of belief, and the rejection of the 'old ways', these organisations effectively corrupt the knowledge systems underscoring traditional building practices. In discussing this issue directly, another informant, E.S. stated that the influence of Evangelicalism and Catholicism at the expense of the traditional *cofradías* was evident throughout Guatemala and Mexico. E.S. drew on personal experiences of discrimination in her own community (Chimaltenango) and presented an interesting side note to the debate, which demonstrated that although under pressure to convert, it was traditional religious practices that drew tourists to her community, providing economic benefit to all, including those businesses owned and operated by Evangelicals.[54]

> The Evangelicals say "Those who carry walking sticks are crazy, why do you do this?" This is how they think, however, those who are educated say "Well this is part of our identity, the mysticism". We say, "You don't have to believe in this, but neither do you have to deny this. This is part of our identity, it's ours". One time we had a problem with the Evangelicals because they said, "Why do you do this?" We replied, "Because it's a celebration, that's why we spend so much money on fireworks and music." The thing is this man was the one who had a large tourist business so we said to him, "You're wrong. The tourists who come to eat at your restaurant come to watch us. If we stop doing this, they're not going to be coming to eat in your restaurant". Everything is relative. If we continue to conserve the tradition, a lot of people come to visit. We said to him, "Are you going to be able to live if you are so against the traditions". I don't think so. I am not part of your religion, i.e. the Evangelical, but I respect it, more so it's my own money to do

> with what I want. But they continue to fight, you always find them in the parks saying, "This is bad, this is bad". However, they're the ones with the businesses selling traditional arts and crafts. In my town, 60% of the restaurants are owned by Evangelicals including the largest, the most powerful, they are the ones taking advantage of the tourists however the tourists have never come to see the Evangelicals, never.[55]

During fieldwork in the more remote areas of Guatemala and Mexico the author witnessed on many occasions Western (typically American) missionaries proselytising religious messages with loud speakers in small Maya communities. This usually occurred on market days when the central commerce areas of various communities were crowded with people. Consequently, the influence of changing religious ideologies on the transmission of traditional architectural practices cannot be understated. Consultant J.A.M.M. continued:

> Our spirituality has been maintained down through time even though it was prohibited during colonial times by the first friars. Certain people at the time had to hide the fact that they were still doing ceremonies whereas others of that generation lost it; even though people were Catholic or Evangelical they still maintained their traditional spirituality. During the 1980s almost all traditional spirituality was hidden due to the violence of the time, but after the peace agreements there are now no problems with practicing it publicly. The language is another element of our identity which will always be conserved. The traditional dress is still maintained in certain places, however, it is now too expensive to buy. The women still use it but they are also beginning to mix it with components from other cultures.[56]

In light of Chapter 6, which focused on the semantic associations of traditional houses, one can understand that a change in religious belief would typically undermine the continuation of traditional building practice, as the traditional cosmological basis for the architectural manifestation would be discarded.

Government and the Market Economy

A number of interviewees in Mexico stated that in the 1960s government engineers were sent to all Indigenous communities to 'educate' people as to the dangers of thatch and timber, and promote the use of concrete block and corrugated iron. According to the Guatemalan informants, this education program occurred in the 1980s in that region. It is evident that all Mexican and Guatemalan government funded housing built in the last 25 to 30 years has been concrete and iron, which over the last 50 years have come to play a major role in the market economy, whereas the employment of locally available timbers and thatch has diminished. As McGee in *Life, Ritual, and Religion among the Lacandon Maya* illustrates:

> In 1982, a [Mexican] government-sponsored house-building program provided the opportunity for even greater change, supplying the materials for cinder-block houses. The three men who took advantage of this offer now own two-room, whitewashed, cement block houses. However, the owners use these homes principally for storage, because they have doors that can be locked and are thus secure from intrusion by

> outsiders traveling through Najá. Following the traditional Lacandon pattern, most everyday activities such as eating, visiting, and cooking are conducted in wooden huts built near their cinder-block houses.[57]

Typically, Mexican government-sponsored programs discouraged the construction of traditional houses on the basis that they were bad for people's health and structurally unsound. A Tzeltal (non-academic) informant explained further:

> People want change for a number of reasons, they think that the concrete block house will be worth more in the future. In the '80s the Mexican Government sent engineers to ask people to use tin in place of thatch because the thatch they said, burns rapidly and is dangerous. There was also a Government program to give metal roof sheeting and block to poor people. I was working with the Government during these years and think it is a good thing to change.[58]

One of the common observations arising from the above interviews, related to both the Mexican and Guatemalan contexts, was the persistent pursuit of the 'modern' through Government-sponsored and organised activities. Social programs in both countries were designed by authorities at the time to explain to people that thatched houses were not healthy, not 'modern' and most definitely not secure, and that to live in one basically meant that the occupants were 'backwards'. The direct effect of this was a reduction in the use and production of traditional construction materials, and an increase in the reliance on market-driven, non-local, available resources. The major concrete manufacturer in Guatemala at the time of conducting interviews was *Concreto Progreso* (Concrete Progress), which was North American-owned but locally operated.

Emigration, the Bracero Program & Changing Social Values

Emigration to the United States of America, whether legal or illegal, is another factor that has detrimentally affected the continuation of Maya house traditions. In the majority of contemporary Maya communities and townships the author observed large Western-style houses two to three storeys high constructed entirely of reinforced concrete and blockwork. Usually, these houses were owned by Maya and Ladino families with members working illegally in the United States, and served to heighten the social status within the community of those families who owned them. This resulted in the wider community aspiring to become the social 'equals' of these individual families, emulating when they went to build their own houses. Those family members working in the U.S.A. rarely return home, as if ever they do it is extremely difficult for them to return to the U.S.A. without the relevant working visas. It was noticed during fieldwork, and through conversations held in the field, that those Maya people who eventually returned home to Mexico or Guatemala created a shift in the overall aspirations of the greater community by proposing that the community move more towards the 'modern', as in the U.S.A. This action adversely affects traditional life-ways and methods, and discredits time-honoured activities like the construction of the Maya dwelling. As L.M. stated, "I

believe this is because it's a copy of the Western perception: 'If they have a house like this, I'm going to have one'."[59]

While undertaking the regional survey, the author observed large numbers of Maya people who spoke good English. This was especially the case in the Highlands of Guatemala and the Chiapas region of Mexico, multitudes of (typically) men from these regions had lived and worked in the U.S.A. By in large, the majority of those people worked in the U.S.A. without a legal work permit. Historically, the illegal worker movement began with a labour agreement between the Governments of the U.S.A. and Mexico in 1942. Called the Bracero Program, this agreement was designed to allow short-term Mexican workers into the U.S.A. to ease the labour shortages in the agricultural sector brought about by the U.S.A.'s involvement in World War 2. More than 350,000 legal Mexican labourers entered the United States per year until the program ended in 1964. The U.S. Government terminated the Program in 1964 amid lobbying from the Department of Labor over the large numbers of illegal 'Braceros' entering the U.S.A. during this period. As Fletcher in "Building from Migration: Imported Design and Everyday Use of Migrant Houses in Mexico" attests:

> Villagers from Napizaro have been involved in labor migration to the United States since the late 1940s. During the Bracero program about half of the married village men migrated. Once a short-term means of pursuing modest goals within a peasant *ejido* economy, today migration is a source of long-term employment and is viewed as a permanent part of the fabric of village economy, society, and culture. Income remitted by migrants represents a significant component of the village economy. In 1989, 88 percent of households in the village received remittances from migrants in the United States. On average, remittances comprised one third of these households' total income.[60]

The Bracero Program was significant on a number of fronts. Firstly, the economic benefits of working in the U.S.A. encouraged the growth of an illegal labour market for Guatemalan Maya workers. Secondly, it was commonly understood that the end of the Bracero Program in the 1960s did not effectively terminate the incidents of illegal workers entering the United States, but resulted in people taking greater risks in entering the country.[61] This illegal labour stream continues to the current day. Guatemalan and Mexican Maya people seek to enter illegally into the U.S.A., aided by 'Coyotes' (guides) at great personal and financial risk.

Additionally, the Bracero Program significantly influenced the transformation of Maya built environments, both in southern Mexico and Guatemala. Work garnered by family members in the U.S.A. results in remittances being sent back to improve living conditions in Maya communities in Guatemala and Mexico. Fletcher's *Casa de Mis Sueños* gives a good background on the history of transnational labour exchange and illustrates the effects of migrant remittances on the transformation of traditional households structures and housing in an indigenous community in northern Mexico[62],

which shifts traditional values and worldviews in Guatemala and Mexico. "Living in houses built with migrant remittances, based on U.S. designs, creates practical problems as well as produces profound disjunctures between tradition and modernity."[63]

Maya households that were once grounded in a relatively stable locale or place become what Fletcher calls a 'transnational' entity for most families. Once the house was the physical representation of family and community; however, for those living outside the community it develops into a conceptual idea not based in a stable cultural setting or place. The house, albeit as a U.S. construct, represents the new ideal image for those displaced identities of family members working outside the community, and the subsequent transformation reflects changing aspirations within the community. Maya culture and its house architecture have become disengaged from place and tradition, as Fletcher notes: "By working in the U.S. to build elaborate houses in Mexico, they are both breaking with tradition and building on the past."[64] Appadurai in *Modernity at Large* discusses the production of locality as central to social life. Even though people are thousands of kilometres from 'home' they still endeavour to produce an 'ideal' place; the locale remains central to their social lives.[65]

Whereas the transformations of Maya built environments in Mexico can be understood as a continuation of changes initiated with the Bracero Program in the 1940s, the situation was somewhat different in Guatemala. Although the Bracero agreement has influenced transformations of Maya built environments in Guatemala since the 1940s, the present research has shown that it only played a minor role in the dramatic changes of pre-Columbian Maya houses.

The 'Gift' of Housing 'Aid'

Although the author's regional housing survey demonstrated that architectural transformations appeared to be similar between Maya groups, the reasons underscoring that transformation were not necessarily a pan-Maya experience. As observed during fieldwork, and noted during the interview process, one of the major influences of Maya domiciliary transformation was 'directed-change programs' offered by Government and non-Government organisations in both Guatemala and Mexico. The majority of non-Government organisations in the study region have a religious orientation and work in a range of different arenas from women's health to community development. Arguably, these organisations have had both positive and negative impacts on the communities in which they worked. In order to more closely examine the 'quality of life' effects of directed change programs on Maya people and housing traditions, the author carried out a post-occupancy evaluation (POE) study of housing provided by Habitat for Humanity, a North American 'Housing Aid' organisation. The majority involved in the POE were Maya and had previously lived in a traditional dwelling.[66]

The reason for choosing to evaluate the work of Habitat for Humanity was its capacity to influence Maya domiciliary environments. At the time of fieldwork in Guatemala alone, Habitat for Humanity was responsible for the construction of over 25,000 concrete and corrugated iron houses.[67] The main goals of this Christian housing project are to provide houses, which 'transform lives' in establishing a 'greater sense of personal dignity', 'self-esteem', 'social tolerance', 'cultural reconciliation', and 'hope' in 'uniting the community' and 'constructing peace'. In its marketing literature for potential charitable investors in the West, the organisation attributes the following values to its housing provision: 'secure' housing forging a 'sense of hope'; a 'decent' house bringing 'simple joys'; housing as a 'beacon' for families; 'transient life' a thing of the 'past'; housing 'yielding stability'; housing 'improving a person's mindset'; a 'decent' house improving 'health' and 'offering tranquility'; the project 'renews minds' and 'transforms lives'.[68]

Typically, house form of Habitat for Humanity ranged from 32 to 51 square metres, and consisted of four rooms, two steel doors, four steel-framed windows, walls made of solid core-filled concrete block, concrete floor and a corrugated sheet roof (Figures 7.7 and 7.8). In 2002, the average house price of such a dwelling was 12,000 Quetzals or approximately 2,500 U.S. dollars. People could purchase a house without needing lump-sum monies up front and it took on average eight years for a family to complete payments on their house with home-owners making monthly repayments of approximately 21 U.S. dollars without accruing interest on the original cost of the house.[69] In Guatemala, 70% of this organization's housing was constructed in rural areas.[70] During the course of the POE, the majority of respondents reported that they enjoyed having a new house, which gave them a heightened sense of social status and personal security. However, due to the lack of environmentally appropriate design, there were some fundamental drawbacks as the houses performing poorly under climatic extremes, being too hot in summer and too cold during winter. Not surprisingly, architectural technology research has maintained that uninsulated core-filled concrete block and corrugated iron sheeting both have an extremely low thermal resistance value, as compared to thatch and adobe construction.[71]

Another major complaint the researcher recorded during the course of the POE was regarding the contractual agreements, which recipients were required to sign before work on the house began. This exhaustive mortgage contract bound people in an already desperate situation to a number of fundamental North American-defined rules and values; rules which were climatically, as well as culturally, inappropriate.[72] In accordance with the contract, 'recipients' were not permitted to plaster, paint or attach sun-shading devices to the house until the completion of all repayments. Recipients were also not permitted to dry and store maize or beans, the local staples, in the traditional manner, which in some areas consisted of storing it in the roof cavity. In any case, metal roof sheeting also failed to provide the necessary heat insulation for the crop to dry evenly, and effectively reduced the longevity of stored food. During periods of excessive heat and humidity, and due to poor ventilation,

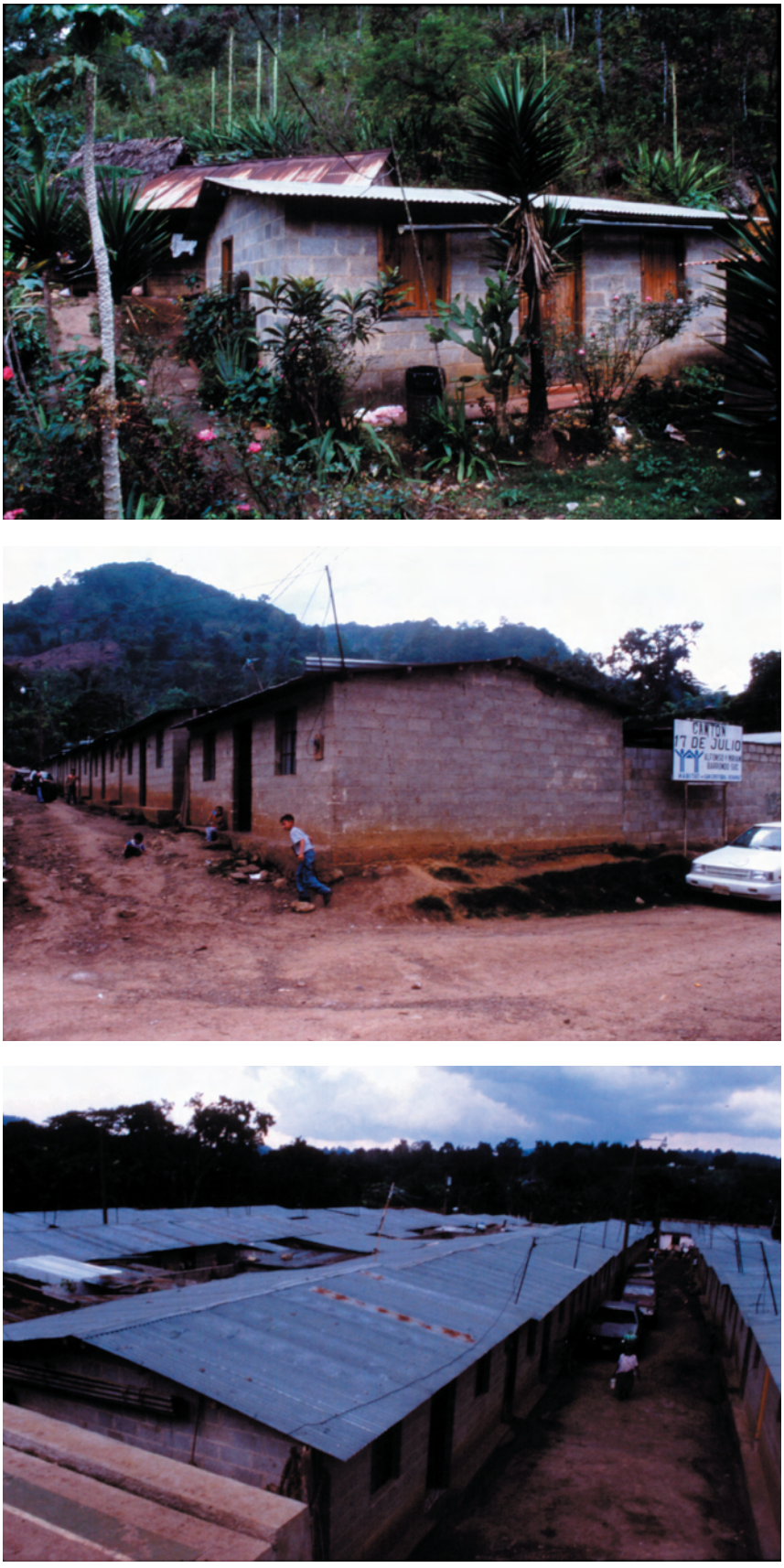

FIGURE 7.6: [top] A rural Habitat for Humanity house. The owners could not afford gas for the internal stove so they rebuilt their original kitchen at the rear of this house; [centre] The corrugated tin roofs of the attached housing in the Habitat suburb; and [bottom] a Habitat for Humanity suburb in the Maya community of San Cristobal, Alta Verapaz, Guatermala. Photographer: Davidson (2002).

metal roof sheeting also failed to protect maize against the *palomia* moth, which destroys the crop in a matter of months unless expensive pesticides are applied. A further reported issue with this form of housing was that recipients were not permitted to cook using traditional open hearth fires, being required to buy gas, which was also costly. In many cases the owners eventually built an adjacent kitchen building that in general conformed to traditional construction methods.

In analysing the research data, it can be concluded that there was no substantial improvement in the residents' living conditions as compared to their previous lifestyles in traditional dwellings. The majority of residents were happy with the system of payment, but were unhappy with not being permitted to modify and adapt aspects of their house, such as adding sun shading and paint. This resulted in the house being under-utilised leading to no definitive advantage in owning this form of house. Another interesting facet of the POE was that the majority of respondents initially assumed the researcher was from Habitat for Humanity, as he did not initially qualify his status in this regard. However, once they were told and were confident that the researcher was not acting on behalf of Habitat, their responses took on a different tone, and went from praising the house to outlining its many problems. When questioned as to why there was such a difference between latter and former responses, it was explained that they feared losing their house as they thought the researcher would report them to the Habitat administration. As requested, all interviews were conducted in complete anonymity.

In essence, the Habitat 'housing aid' project, as investigated, was climatically inappropriate, ignored traditional knowledge systems, and was insensitive to the traditional sociospatial patterns of its occupants. The major advantage to participants of the program was that people could purchase secure, high status housing. However, as outlined above, the problems arguably outweighed the benefits. People still lived in poverty and were required to 'transform' their behaviours in order to 'fit' the house, rather than the house transforming to 'fit' their behaviours and modes of living.

The issues described above exemplify the direct impacts of inappropriate housing on traditional domiciliary environments in Guatemala and Mexico. However, the POE unveiled a range of indirect impacts of such housing on people in the communities who could not afford Habitat houses, which generally lay in the image, and belief, that this form of housing represented status and success in the wider community. For example, in a Pokomchi' Maya community in the state of Alta Verapaz, Guatemala there were a number of replica 'aid' houses, which attempted to follow a similar house form in copying window and doors positions, size and scale of house. When the owner of one 'replica' property was asked as to the reason underlying his mimicry, the author was told that his cousin in the same town had been the recipient of a 'Habitat' house, but he had missed out. He had built the replica house in order to promote the idea to the rest of the community that he too could afford such

FIGURE 7.7: The interior of the Habitat house. Note the internal division in the house. Each house is divided into four, the Maya were unaccustomed to living with internal divisions, which itself results in loss of family communication. Photographer: Davidson (2002).

FIGURE 7.8: [top] an early image of the three Kekchi' houses, the front house was under construction when I first visited. Note the family *milpa* in front of the house had recently been harvested; and [bottom] an image taken a year later showing the fully grown milpa covering the compound. Photographer: Davidson (2002).

a house (see Figure 7.3). He said it was important for his children to feel that they were at an equal level in the community with everyone else. Interestingly, the family did not use the house, but still lived, slept and ate in the traditional house to the rear of the new dwelling. Nevertheless, the owner had aligned the new house adjacent to the main street in the community so that everyone passing by could admire his good fortune.

Replication of 'aid' housing is evidence of self-determination in the adaptation of traditional environments. However, questions arose as to the appropriateness housing being utilised as the basis for replication. The Habitat for Humanity housing is not based on any particular tradition, Euroamerican or other, and is a development-driven solution designed in accordance with economic outcomes relating to the affordability of the local population, ignoring traditional sociospatial patterns and technology. Economy has determined the level of detail and resolution in the house design. At the time of fieldwork, Habitat for Humanity was also implementing larger urban planning schemes in various areas of Guatemala via the construction of housing suburbs to take advantage of 'economies of scale', resulting in higher densities and greater savings as well as less initial outlay (Figure 7.6 and 7.7). Ironically, this attempt to 'suburbanise' Maya peoples was reminiscent of Spanish attempts at *congregación* and *reducción* in the colonial period. Figure 4.5 in Chapter 4 illustrates the different settlement patterns and reductive effects on settlement planning through Early Colonial *congregación* and the gridded plan. The question that should perhaps be asked is what impact this will have on the future of Maya house traditions in Guatemala and Mexico?

The Politics of "The Gift"

During the POE, it was noted that the practice of Habitat for Humanity International was to set up a contractual arrangement between themselves and the 'recipients' of their housing. This involved an agreement whereby Habitat 'gives' a house; a recipient 'receives' a house; and in return provides a monetary repayment for the house. However, as seen in the current research, this housing aid fails to effectively relieve a poverty situation. If one looks into the history and evolution of the contractual obligation, one may see that the contract evolved from a system of *prestation* (exchange) and counter-*prestation*. One of the foremost publications on the politics of exchange systems has been *The Gift: Forms and Functions of Exchange in Archaic Societies*, written by Marcel Mauss in 1970. Using a Polynesian example, Mauss explains that pre-modern systems of exchange relied on three parts to a gift or *prestation*, the original 'gift' itself, the obligation to 'receive', and the final most important element, the 'spirit' of the gift – the obligation to repay the gift received.[73] Mauss goes on to show that in the Polynesian (and other) exchange system, the 'spirit of the gift', that third spiritual element between the original giver and receiver was charged to destroy the recipient if they do not return the original gift with a gift of their own; thus, preserving the relationship and returning the original spirit to its rightful owner.

FIGURE 7.9: [top] the three generational houses maintain traditional domiciliary configurations and socio-spatial patterns; [centre] the front concrete and iron house with a small shop for selling foodstuffs; and [bottom] the traditional Kekchi' hosue at the rear with maize and beans being dried on the front patio area. Photographer: Davidson (2002).

> It follows clearly from what we have seen that in this system of ideas one gives away what is in reality a part of one's nature and substance, while to receive something is to receive a part of someone's spiritual essence. To keep this thing is dangerous, not only because it is illicit to do so, but also because it comes morally, physically, and spiritually from a person... Total prestation not only carries with it the obligation to repay gifts received, but it implies two others equally important: the obligation to give presents and the obligation to receive them.[74]

Of particular interest to this thesis is exactly how the Habitat for Humanity system of giving and receiving payment for houses sits within the political system of gift exchange presented by Mauss. As asserted previously in this dissertation, the Maya traditionally repay the Earth Lord for whatever they take from nature. Communal assistance in house building is repaid in kind with reciprocal labour arrangements and celebratory feasts to thank those who participate. Reports from the field have indicated that even though Habitat for Humanity claim[75] that recipients of housing work alongside contractors and backpackers building the houses, this was generally untrue. Residents reported that they were not given the chance to partake in house construction, and would mostly provide ancillary support services, such as making cups of tea for the labourers. Mauss elucidates: "The obligation of worthy return is imperative. Face is lost forever if it is not made or if equivalent value is not destroyed. The sanction for the obligation to repay is enslavement for debt."[76]

Taking this into account when viewing the post-occupancy findings, it has been the contention of this study that Habitat for Humanity housing is not only exacerbating the already dire economic situation in Maya communities in Guatemala but has enslaved these communities to years of spiritual and economic debt. The problem as far as this dissertation is concerned lies in so-called 'recipients' being bound into a contract whereby they agree to monetarily repay the original 'gift', but who are then denied their self-determined obligation to repay the gift as they are not being given the opportunity to fully contribute during construction. In the end, they remain indebted to a non-Maya organization, which seems more interested in counting the numbers of houses they built than tallying the numbers of Maya people they have actually alleviated from poverty.[77] The number of houses constructed is by no means an indication of successful 'aid', especially when the technological product proved to have a variety of design deficiencies, and the process of delivery was disempowering. It is arguable that 'aid' organizations such as Habitat for Humanity should be responsible for building appropriate housing that recognises the value of traditional lifeways and behaviours. These organisations have the capacity to improve the situation in the Maya realm by shifting focus to who the Maya are, and away from who they are not. Surely, recognition of the value of traditional life ways and the importance of self-directed architectural transformation will be imperative to the future of Maya environments.

FIGURE 7.10: [top] the front patio has been maintained and strengthened by the addition of one-roomed houses along its length; [centre] an altar in Rogelio's house showing syncretism in religious paraphenalia: the maize offering, and the image of the Catholic Virgin Mary; and [bottom] the rear traditional dwelling represents Rogelio's mother's desire to maintain the traditional dwelling for cooking, storage and sleeping. Photographer: Davidson (2002).

The Continuity of Change: The Revitalisation of the Maize People

In light of the above discussion on appropriate responses to Maya house transformation in Guatemala and Mexico, this section has introduced the findings of a post-occupancy evaluation of a self-directed Maya architectural transformation. In conjunction with this, and through a literature review, the section also presents evidence of a pan-Maya philosophy that accounts for change within tradition that has been used as a stabilising conceptual framework by generations of Maya peoples. Both are valuable to the current debate regarding the 'appropriateness' and acceptance of transforming traditions in contemporary Maya house architectures.

Jaloj-Kexoj: The Husk and the Kernel

Until relatively recently, the prevailing view among non-Maya academics was that Spanish conquest had all but destroyed pre-Hispanic forms of ancient Maya culture. The belief was that Maya worldview and its associated behaviours were all constructed in reference to Spanish (Christian) influence and control. While there are some scholars who have persisted in aligning themselves with this theory, the majority of Mayanists (including Maya scholars themselves) believe that this is incorrect. They favour the view that the Maya are "adaptable and capable of absorbing and synthesizing new ideas into their vision of the cosmos… [and]…that changes in the world of their actual experience caused by the arrival of the Spanish have been accommodated by their capacity to transform their models of the cosmos without destroying the basic structures of the models themselves".[78] It is their capacity to accommodate change that gives the Maya strength to modify their cultural products without completely succumbing to external influences. This capacity to resist domination through absorption and adaptation of a belief system points to an underlying Maya philosophy that accepts change as inevitable. This is no more evident than in the ready acceptance of the Christian cross by contact-era Maya. Apparently, the Christian cross, the image of domination and control, was appropriated due to it resemblance to the Maya *Na-Te'-K'an* or Foliated Cross.[79] The Foliated Cross in Maya mythology has represented the *Wakah-Chan*, or World Tree (Figure 7.11). Instead of succumbing to Spanish ideological pressure, the Maya were able to draw on their underlying worldview in a way that enabled the adaptation of both religious concepts. The result of this external expression of acceptance was the internal continuity of the traditional belief system. As Freidel, Schele and Parker state:

> The Christian cross became, quite literally, the pivot and pillar of their cosmos, just as the World Tree had been before. Anthropologist Evon Vogt often recalls with irony and amusement his discovery that the ostensible Christian piety that the present-day Zinacanteco Maya of Chiapas display toward their wooden crosses is, in fact, a declaration of cultural autonomy from their oppressors. This, we believe, is how the Maya vision of the cosmos works. It is a dynamic model combining historical knowledge, myth, and the practical experience that is perpetually being re-created through ritual performance.[80]

In "The Flowering of the Dead: An Interpretation of Highland Maya Culture," Carlsen and Prechtel present a contemporary example of this overarching belief system called *Jaloj-K'exoj*.[81] The authors discuss the significance of *Jaloj-K'exoj*, as a 'reconstituted' traditionalist religion of the Atiteco (Tz'utjuil Maya) of Santiago Atitlan, Guatemala, and demonstrate that *Jaloj-K'exoj* is the continuation of pre-Hispanic Maya worldview, which is still a central paradigm of *Costumbrista*[82] traditionalist behaviour in Santiago. Furthermore, they explain that the philosophical concept of *Jaloj-K'exoj* is the foundation for the Maya's adaptive strength, and is a continuation of the pre-Hispanic Maya worldview through which an understanding of circular time has permeated Maya culture, economic, political and religious institutions.[83] Carlsen and Prechtel illustrate *Jaloj-K'exoj* to be a cognitive tool used by the Maya to accommodate transformation and adaptation in their social systems, and posit that while *Jaloj-K'exoj* is an Atiteco term, it refers to a philosophical concept that is common to all Maya cultural groups. The term *Jaloj-K'exoj* itself underscores the significance of the adaptive powers of the Maya worldview. The authors continue:

> The central concept underlying Atiteco religion is contained in the term *Jaloj-K'exoj*. As will be shown, myth, standardized prayers and discussion among Costumbristas assume a didactic function in the transmission of *Jaloj-K'exoj*. The term itself is derived from two words, *jal* and *k'ex*, both of which denote types of change. *Jal* is the change manifested by a thing as it evolves through its individual lifecycle. Traditionally, Mayans have believed that life arises from death. Consistent with this belief, beginning in death, *jal* is change on the outside, at the 'husk'. By contrast, *k'ex* occurs at the 'seed', and refers to generational change. While maintaining a distinct concern with ancestral origin, *k'ex* relates to the transfer, hence the continuity, of life, and may account for anthropological observations of Maya 'ancestor worship'…Moreover, it relates to what might best be described as a form of reincarnation, an integral aspect of Maya religion which has by and large been excluded from scholarly consideration…*K'ex* is a process of making the new out of the old. At the same time, just as a single plant produces multiple offspring, *k'ex* is change from one into many. Together *jal* and *k'ex* form a concentric system of change within change, a single system of transformation and renewal.[84]

The Maya have a long history of resisting external attempts of domination and control. During the colonial-era the Spanish made several attempts to control the Maya population through organisational processes called *congregación* (congregation) and *reducción* (reduction).[85] As previously discussed, Spanish authorities would move large populations of people from rural 'dispersed' communities into 'nucleated' urban areas, which enabled greater control of the Indigenous populations. In additional, such clustering facilitated an ideological domination through religion-based philosophy. It was the Maya capacity to accommodate, absorb and synthesise new ideas without destroying the basic ideational foundation itself that has enabled them to survive hegemonic attempts such as *reducción* and *congregación*.[86] This adaptive capacity indicates an underlying philosophy that accepts change as inevitable and necessary. Such capacity is no more evident than in the ready acceptance of the Christian cross by colonial-era Maya.

> Unlike mindless billiard balls, the newly 'conquered' Maya possessed that element necessary to stabilize the 'Contact' experience…Fariss states that 'it is not the preservation of an unmodified cultural system under a veneer of Spanish customs, but the preservation of a central core of concepts and principles, serving as a framework within which modifications could be made and providing a distinctive shape to the new patterns that emerged' …She adds that the cultural configuration which did emerge 'remained, for all the transformations, distinctively and identifiably Maya'.[87]

It has been the contention of this dissertation that the pan-Maya philosophical concept of *Jaloj-K'exoj* is the key to understanding the dramatic housing transformations that have occurred in the last 100 years in Maya communities in Guatemala, Belize and Mexico, and in finding a way forward that promotes quality of life rather than diminishes it. *Jaloj-K'exoj* exemplifies Maya recognition of the importance of traditions in the survival and maintenance of future Maya identities. The concept itself points to a traditional belief system, which has continued to underpin Maya resistance to external influences and authorities. The purpose of this discussion is to illustrate that *Jaloj-K'exoj*, in whatever form, or name, is a pan-Maya philosophical tool used in both the past and present to accommodate cultural change and transformation. As Maya consultant E.S. stated during his interview:

> ...we need to recuperate that part we have lost and from there we can draw strength from the Maya identity. In the recuperation of our identity, it doesn't matter where we are as we can use the weavings and other elements which formed the Maya identity previously. Therefore, how is one to represent, not represent, or symbolize the Maya identity within objects? In this we meet house construction. How can one give a Maya identity to a house without first making it comfortable – a house with new materials or including the resources available in the communities? If these things exist, why not use them? There is a reconstruction, a recreation of our permanent identity, this has become more relevant after the peace accords.[88]

A question remains as to whether or not it would be possible to use adaptive concepts such as Jaloj-Kexoj in house architecture. In contemplating this, the author visited Tonten, a small Kekchi' community located outside Coban in the Verapaz region of central Guatemala three times over an 18-month period (January 2001 to July 2002). The reason for visiting Tonten on these occasions was to undertake a longitudinal study of Rogelio's house, which appears to be a successful generational/ transformational model of contemporary Maya housing. This particular family compound sparked the author's interest when apparently over time its architectural form took shape in a distinctive and unique manner, not observed previously during fieldwork. Of note was the maintenance and adaptation of the traditional dwelling at the rear of the property, with additional dwellings constructed in stages in front of the original house.

On interviewing the owners, the overall conceptual idea for the house was a response to the three generations contained within the family group (see Figures 7.8 to 7.9). The rear traditional house was retained as the living and cooking area for Rogelio's mother, who was elderly at the time. The central

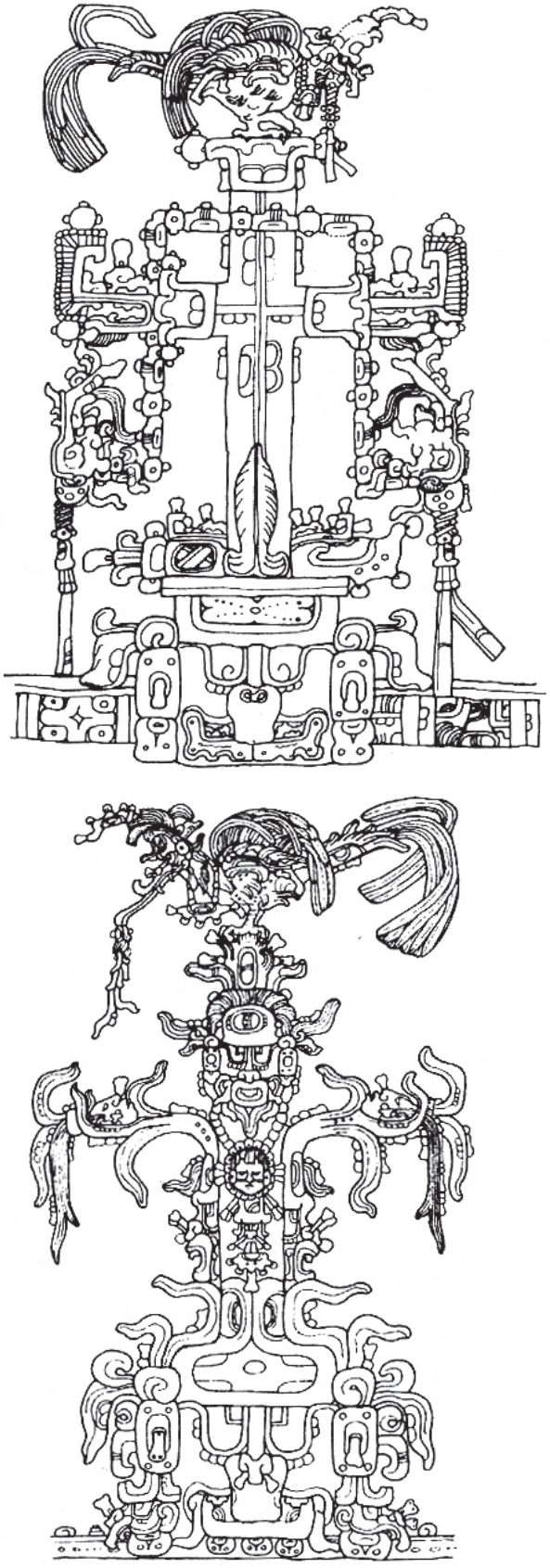

FIGURE 7.11: The *Wakah-Chan* in the top image represents the Milky Way in pre-Columbian mythology, while the Na-Te'-K'an or the Foliated Cross in the bottom image is a syncretism between the Christian cross of the colonial-era and the Wakah-Chan of pre-Columbian belief. Source: Friedel etal. p.54 (1993).

timber-framed plank house with the sheet metal roof was the addition he made when he and his wife were married, 15 years previously, while the third most recent concrete and corrugated iron house was built in 2002 at the request of his daughters when they were teenagers. Each house responded to a different generation of Rogelio's family; this was evident in the changing nature of available materials and techniques used in construction. Not only had Rogelio maintained family unity through house architecture, he had achieved it in a way which maintained traditional sociospatial dynamics. The two new houses on the lot were one-roomed dwellings with no internal divisions, remaining similar in spatial form to the traditional house at the rear, which served to reinforce the original patio area necessary for drying produce and undertaking other social activities.

The reason for analysing this house was the observation that, while satisfying the different generational requirements and maintaining traditional domiciliary patterns, Rogelio was able to manage competing architectural demands in order to construct a family compound which managed transformation yet maintained respect for tradition. In discussion, he said that he saw change as inevitable but had managed the transition in a way that was the least stressful to all family members. His house was a living example of *Jaloj-Kexoj* in accommodating change and transformation in and through architecture.

Conclusions

This chapter has shown that pre-Columbian house traditions are in decline, and will most likely cease to exist within a generation, to be replaced by dwelling forms that are more representative of the desires and social values of contemporary Maya peoples in the study region. The chapter began by illustrating the different perceptions of traditional practices held between informants, which appeared to be dependent on their level of academic education. All consultants expressed the opinion that change to building traditions was a positive experience, however academically educated consultants were more likely to see the maintenance of traditional behaviours and practices as important for the future of Maya social and cultural environments than their non-academic counterparts.

At the time of the author's fieldwork in Guatemala, Belize and Mexico, traditional Maya houses (*Chozas* or *casas de paja*) symbolised poverty and depression to the local Maya. Commonly, these dwellings were known as *casas de los pobres* or 'houses of the poor' and stood as historical reminders of a time past. The majority of Maya people interviewed in remote villages (*aldeas*) believed that their traditional housing held little benefit for them and described them as *atrasos* (backwards). Most of the houses documented in the survey were the last of their kind, and were either inhabited by an elderly couple or an extremely poor family lacking the resources to build a new house. The author was more likely to encounter traditional houses in remote villages (*aldeas*), which exhibited traditional forms of settlement than in contemporary urban communities. As such, the predominant house form

in the majority of Maya communities is no longer timber and thatch but concrete block and corrugated iron, which signifies higher economic and social status, social progress and personal development on behalf of its owners. One of the principal reasons for this change in building materials and traditional settlement patterns has been changing personal and social values in response to a desire to move away from housing subject to ridicule and discrimination over the last 70 years.

Since Wauchope's original investigation in the 1930s, the chapter has illustrated transformative nature of the post-World War 2 Bracero labour agreement between the U.S.A and Mexico, which opened up the nation states of Central America to the supposed advantages of the free market economy and labour market in the U.S.A. The Bracero Program was an instrumental element in the dramatic transformation of Maya built environments witnessed over the last 70 years through the creation of an initially legal labour market. When the program ended in the 1960s the legal labour market became an illegal option, as prospective workers kept arriving in the U.S.A. from throughout Central America. Over the last 50 years, their influence on the transformation of home communities through monetary assistance is striking.

When compared to modern concrete block houses, the positive aspects of traditional Maya houses were lower construction costs, being able to utilise locally available materials; lower labour costs through community participation during the construction period; greater macro-environmental significance through sustainable use of locally available materials and resources; and greater micro-environmental significance through post-occupancy comfort related to ambient comfort within traditional houses, the longevity of agricultural products within the dwelling, the conservation of building (thatch) material due to effects of smoke. The negative aspects of traditional houses were higher time costs related to finding building materials; higher long term maintenance costs whereby thatch is replaced every eight to twelve years on average; security for self and possessions through the increased risk of theft, timber houses as easy to break into; social perceptions of status, whereby thatched houses are viewed as past traditions for the poor; no perceived future economic benefit; and as health risks with animals living inside on dirt floors.

Furthermore, the chapter has provided empirical evidence of the connection between the more contemporary forms of Maya housing and their traditional predecessors. As E.S. a Maya consultant stated, change itself was not the problem but the way in which it was affected. E.S. was worried about the unconscious loss of important elements of traditional elements of belief and behaviour. This became a common discussion point in the majority of interviews conducted during fieldwork. The chapter also furnished empirical evidence of the continuation of traditional domiciliary practices such as the maintenance of the courtyard configuration and extended kinship relationships underlying its form. Therefore, the courtyard is not dependent on the physical material form of the traditional

house for its design as the majority of contemporary family compounds in the study region utilise this domiciliary format in conjunction with concrete block and corrugated iron houses.

It is important to view Maya domiciliary transformation in relation to its 4,000-year history.[89] To understand this history, one must ask why such a dramatic scale of house transformation has occurred in only the last 70 years of that 4,000-year history? In reference to the empirical research undertaken during fieldwork, it was found that traditional houses are no longer a viable option for contemporary Maya peoples. Values have changed, new materials are more accessible, and there is a need to conform to avoid discrimination. The Maya peoples have decided for themselves that the set of building traditions characterised as 'Maya of the past' no longer represent contemporary identity. Just as other expressions of Maya identity (traditional dress and language) have transformed in recent years, so has Maya housing. In light of the fact that these elements are representative of traditional Maya identity, and are therefore potential avenues for discrimination in a wider post-colonial context, it is not surprising that transformation has occurred. The issue is not that people are transforming or have transformed but relates to self-determination and adaptive capacity during the transformation process.

The earthquake of 1976 was viewed by all Maya informants, both academic and non-academic, as the main catalyst for major change in Guatemala in the last 50 years. Not only did it spark the 20-year civilian uprising but it also provided a path for international aid agencies whereby the Euroamerican model of housing was presented as the correct 'modern' way to build. Traditional architectural practices faltered under the weight of these newer building forms. At no stage were the qualities of these houses evaluated as to their significances, such as their climatic and religious significances. For the first time in Maya history their house traditions were exposed to external globalising forces in a dramatic and rapid way. The house became inexorably linked to non-Maya social norms and aesthetics, which served to raise the importance of social status, and lessen the previously held semantic values of the traditional dwelling.

In evaluating religious influences as concomitant with the end of Maya traditional houses, the chapter has presented the results of a case study into housing 'aid' delivered by Habitat for Humanity International, a North American Christian religious organisation. It has been the contention of this dissertation that this new form of housing aid was a North American-centric practice whereby external authorities of change imposed values on aspects of Maya built environments, which were not relevant to the cultural settings where they were situated. This American-centric attitude and method of application lacked consideration and respect for Maya values and ignored community-based agency and self-determination in the construction and representation of Maya identities and built environments. In discussing the relevance of self-determination in house procurement, it could

be argued that the new phenomenon in human settlement discourse is of critical importance. At the time of writing, housing being built in Guatemala by Habitat for Humanity International was based primarily on economic outcomes and generally ignored traditional knowledge systems and associated behavioural patterns. The direct and at times indirect consequences of this organisation's actions led the current author to question appropriate authority measures and the authorisation of change in the creation of contemporary traditions. Organisations such as Habitat for Humanity International have affected the adaptive capacity of housing recipients through the restrictive rules and values contained in the mortgage contracts.

It has been argued in this chapter that aid organisations such as Habitat for Humanity International have a responsibility to build appropriate housing that recognises the value of traditional lifeways and behaviours. Contestably, such organisations have the capacity to improve the situation in the Maya realm, specifically through the recognition of the value of traditional lifeways and the importance of self-directed architectural transformation in the future procurement of Maya built environments. Moreover, the chapter has presented a correlation between Spanish colonial-era attempts at *congregación* and *reducción* and the newly constructed (at the time of fieldwork) Habitat for Humanity International suburban housing estate in San Cristobal Verapaz. This mass of concrete block and corrugated iron construction, while providing high social status and personal security, did not appear to alleviate the poverty situation of its owner-occupants, the majority of whom had lived previously in traditional houses and were struggling to adjust to their new dwelling and social setting.

Furthermore, the chapter has provided evidence of a pan-Maya socio-religious concept called *Jaloj-Kexoj*, a traditional belief system that underpins Maya adaptive capacity to absorb and amalgamate new ideas without destroying their traditional practices. The chapter demonstrated that it was *Jaloj-Kexoj* that enabled the Maya to survive Spanish ideological and religious conquest during the colonial era. In line with the discussion of *Jaloj-Kexoj*, the chapter also presented a case study of Rogelio's transformational/generational house, which illustrates a successful union of contemporary and past building practices, and underscores the importance of self-determination in processes of adaptation to new forms of house architecture and technologies.

As a final note, in attempting to achieve stability in Maya built environments, housing aid organisations such as Habitat for Humanity International have created instability through elevating economic outcomes over social and cultural values, which does not permit self-determination in the creation of traditions that have been an important part of Maya history and survival. It could be said that adaptation is a dynamic practice, which functions as a tool for identity maintenance and continuity during moments of social transformation. A key value of the regional housing survey

was the finding that Maya house traditions shared similar domiciliary configurations and symbolic foundations, tempered by factors such as location, language and circumstance to generate people-specific and place-specific housing. *Casas de paja* reflected the identity, knowledge systems, religious associations, histories and geographic locations of its owner groups. There is no reason why contemporary house traditions could not show the same respect. In light of the discussion above, the author contends that it is necessary for Maya capacity to fuse with self-directed change, and for the Maya to engage collaboratively with consultative processes that formulate approaches to creating industrialised housing. Such involvement and incorporation of cultural symbols and patterns is vital for Mayan welfare in the future.

Endnotes

[1] T.C.R., Personal Communication, CIRMA, 28.06.02
[2] Foreigners are generally distrusted at first due to foreign (typically U.S.A.) influence in the region over the last 50 years. Many promises have been made, few have come to fruition.
[3] L.M., Personal Communication, OKMA, 05.07.02
[4] R.S. Carlsen, *The War for the Heart & Soul of a Highland Maya Town* (Austin: University of Texas Press, 1997), 40.
[5] Ibid.
[6] Ibid.
[7] J.A.M.M., Personal Communication, ALMG, 08.07.02
[8] L.M., Personal Communication, OKMA, 05.07.02
[9] T.C.R., Personal Communication, CIRMA, 28.06.02
[10] J.A.M.M., Personal Communication, ALMG, 08.07.02
[11] J.A.M.M., Personal Communication, ALMG, 08.07.02
[12] J.A.M.M., Personal Communication, ALMG, 08.07.02
[13] E.S., Personal Communication, Cholsamaj, 08.07.02
[14] 12.5 pesos to the dollar in 1975.
[15] I. Press, *Tradition and Adaptation: Life in a Modern Yucatan Maya Village* (London: Greenwood Press, 1975), 23.
[16] Popb'al Ti' man, Personal Communication, Huitzab'al, 08.06.02
[17] C. Wagley, "The Social and Religious Life of a Guatemalan Village," *American Anthropologist* 51, no. 4 (1949): 15.
[18] Ch'orti', Personal Communication, 25.06.02
[19] V.P.M., Personal Communication, PLFM, 04.07.02
[20] V.P.M., Personal Communication, PLFM, 04.07.02
[21] Carlsen, *The War for the Heart & Soul of a Highland Maya Town*, 33.
[22] V.P.M. pers. comm. 04.07.02.
[23] E.S., Personal Communication, Cholsamaj, 08.07.02
[24] E.S., Personal Communication, Cholsamaj, 08.07.02
[25] J. Rykwert, "Editor's Foreword," in *Ten Books on Architecture by Leone Battista Alberti*, ed. J. Rykwert (London: Tiranti, 1955), v.
[26] L.M., Personal Communication, OKMA, 05.07.02
[27] R. Carlsen, Personal Communication, 28.10.05
[28] R. Carlsen, Personal Communication, 28.10.05
[29] R. Carlsen, Personal Communication, 28.10.05
[30] E.S., Personal Communication, Cholsamaj, 08.07.02
[31] E.S., Personal Communication, Cholsamaj, 08.07.02
[32] E.S., Personal Communication, Cholsamaj, 08.07.02
[33] T.C.R., Personal Communication, CIRMA, 28.06.02
[34] T.C.R., Personal Communication, CIRMA, 28.06.02
[35] T.C.R., Personal Communication, CIRMA, 28.06.02
[36] R.A. Olsen and R.S. Olsen, "The Guatemala Earthquake of 4 February 1976: Social Science Observations and Research Suggestions," *Mass Emergencies*, no. 2 (1977).
[37] V. Montejo, *Voices from Exile: Violence and Survival in Modern Maya History* (Norman: University of Oklahoma Press, 1999), 52.
[38] E.S., Personal Communication, Cholsamaj, 08.07.02
[39] E.S., Personal Communication, Cholsamaj, 08.07.02
[40] A.D., Personal Communication, CIRMA, 04.07.02
[41] A.D., Personal Communication, CIRMA, 04.07.02
[42] A.D., Personal Communication, CIRMA, 04.07.02
[43] Montejo, *Voices from Exile: Violence and Survival in Modern Maya History*, 4.
[44] Ibid., 52-3.
[45] Carlsen, *The War for the Heart & Soul of a Highland Maya Town*, 33.
[46] T.C.R., Personal Communication, CIRMA, 28.06.02
[47] N.S.I., Personal Communication, CEDIM, 08.07.02
[48] T.C.R., Personal Communication, CIRMA, 28.06.02
[49] T.C.R., Personal Communication, CIRMA, 28.06.02
[50] T.C.R., Personal Communication, CIRMA, 28.06.02
[51] T.C.R., Personal Communication, CIRMA, 28.06.02
[52] L.M., Personal Communication, OKMA, 05.07.02
[53] L.M., Personal Communication, OKMA, 05.07.02
[54] E.S., Personal Communication, Cholsamaj, 08.07.02
[55] E.S., Personal Communication, Cholsamaj, 08.07.02

[56] J.A.M.M., Personal Communication, ALMG, 08.07.02
[57] R.J. McGee, *Life, Ritual, and Religion among the Lacandon Maya* (California: Wadsworth Publishing Company, 1990), 39-40.
[58] Tzeltal, Personal Communication, 22.01.01
[59] L.M., Personal Communication, OKMA, 05.07.02
[60] P.L. Fletcher, "Building from Migration: Imported Design and Everyday Use of Migrant Houses in Mexico," in *The Allure of the Foreign: Imported Goods in Postcolonial Latin America*, ed. B. Orlove (Ann Arbor: The University of Michigan Press, 1997), 188.
[61] D.S. Massey and Zai. Liang, "The Long-Term Consequences of a Temporary Worker Program: The Us Bracero Experience," *Population Research and Policy Review* 8 (1989).
[62] P.L. Fletcher, *La Casa De Mis Sueños: Dreams of Home in a Transnational Community* (Oxford: Westview Press, 1999).
[63] Ibid., 14.
[64] Ibid., 186.
[65] A. Appadurai, *Modernity at Large: Cultural Dimensions of Globalization*, vol. 1, Public Worlds Series (Minneapolis: University of Minnesota Press, 1996), 182.
[66] This section was presented as a paper titled "Western 'Architectural' Ideology and Its Impact on the Traditional Building Practices of the Maya Peoples of Guatemala and Southern Mexico" at the 2002 *ADDITIONS to architectural history SAHANZ XIX* conference in Brisbane, Australia.
[67] As stated on the Habitat for Humanity International website. http://www.habitat.org/intl/lac/86.aspx Accessed 3 May 2009.
[68] These points (in inverted commas) are all article headings in the April/May 2002 edition of the official publication of this Aid Organization.
[69] As stated on the Habitat for Humanity International website. http://www.habitat.org/intl/lac/86.aspx Accessed 3 May 2009.
[70] Ibid.
[71] See A. Zold and S.V. Szokolay, *Thermal insulation*, PLEA Notes, (Brisbane: The University of Queensland Press, 1997), p. 59.
[72] The author saw evidence of this when shown the contract.
[73] M. Mauss, *The Gift: Forms and Functions of Exchange in Archaic Societies*, trans. I. Cunnison (London: Cohen & West ltd., 1970), 10.
[74] Ibid.
[75] As stated on the Habitat for Humanity International website. http://www.habitat.org/intl/lac/86.aspx Accessed 3 May 2009.
[76] Mauss, *The Gift: Forms and Functions of Exchange in Archaic Societies*, 41.
[77] The Habitat for Humanity International website states that 27, 731 houses had been constructed in Guatemala up to May 2009. http://www.habitat.org/intl/lac/86.aspx Accessed 3 May 2009.
[78] D. Freidel, L. Schele, and J. Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path* (New York: Quill William Morrow, 1993), 38.
[79] Ibid.
[80] Ibid., 39.
[81] R.S. Carlsen and M. Prechtel, "The Flowering of the Dead: An Interpretation of Highland Maya Culture," *Man* 26, no. 1 (1991): 36.
[82] Spanish word referring to those who follow the old ways or traditional customs.
[83] Carlsen and Prechtel, "The Flowering of the Dead: An Interpretation of Highland Maya Culture," 36.
[84] Ibid.: 26.
[85] S.D. Markman, *Architecture and Urbanization in Colonial Chiapas, Mexico*, (Philadelphia: The American Philosophical Society, 1984).
[86] D. Freidel *et al.*, 1993, p. 38
[87] R.S. Carlsen and M. Prechtel, "The Flowering of the Dead: An Interpretation of Highland Maya Culture," in *Man*, Vol. 26, No. 1, 1991, p. 25.
[88] E.S., Personal Communication, Cholsamaj, 08.07.02
[89] There is archaeological evidence that these traditions existed before 2000 B.C. See P. D. Sheets, *The Ceren Site: a prehistoric village buried by volcanic ash in Central America*, (Fort Worth: Harcourt Brace Jovanovich College Publishers, 1992).

VIII
Conclusions

This chapter outlines the contributions of the research to knowledge of cross-cultural architectural research and Maya studies, and focuses on the two main research agenda, being: 1) a deeper ethnographic understanding of the physical and metaphysical architectural qualities of past and contemporary Maya house traditions; and 2) the contribution this understanding makes in recasting the perception of these architectures within the dominant Euroamerican architectural history and theory tradition. Table 5 (Appendix F) presents a compilation of the thesis findings, collating readings, empirical data collection and historical archival analysis, and could be read in conjunction with the discussion below.

Ethnographic Significance of Research

This thesis is the first to undertake an extensive ethnographic investigation of Maya house architectures, in particular the dwelling types commonly called *casas de paja*. In combining architectural, anthropological, and ethnoarchaeological approaches, the thesis has drawn together information on a generally unknown and poorly understood subject matter. Empirical research in conjunction with archival analysis and historical literature review demonstrated that of the 27 Maya house types documented in this thesis, 15 were previously unrecorded. Thus, this thesis has become the most comprehensive study of Maya *casas de paja*, and the first scholarly work to attempt to understand the underlying cognitive schemata influencing the physical form of Maya houses from a pan-Maya regional level. Of further significance is the understanding gained of the processes influencing architectural transformation in the 70 years since the publication of Wauchope's *Modern Maya Houses*. Furthermore, the regional overview of traditional house architectures has provided a framework for ongoing research, whereby each house could be treated as a separate field of investigation. In saying this, any further research into this subject must be undertaken with a sense of urgency as a number of the houses surveyed were likely to be the last of their kind. Based on the dissertation findings, it is the author's contention that most of these Maya house forms (pre-Columbian in origin) will cease to exist in the near future; however, it is impossible to predict an exact end date for this tradition.

Salvage Architectural Ethnography of Maya House Traditions

Unequivocally, the act of recording the physical attributes of Maya houses through architectural documentation has led to a number of significant findings. The earliest observation of the survey was that house form was language specific, which in terms of cross-cultural architecture studies is significant, as according to expert opinion, the Maya appear to be one of the only indigenous peoples' worldwide that demonstrate this language-house-specificity.[1] Another significant observation was the high correlation between house form, geographic location and climate, which led to the determination of the Midlands house type, in addition to the commonly referenced Highlands and Lowlands designations in Mayanist academic works. The thesis has demonstrated that language is the best

method to categorise Maya house architecture, with geography as a subcategory in further breaking down regional variants of the physical forms. While house shape, scale and proportion serve to elicit stylistic differentiation by language group, the use of different physical material finishes in response to climatic differentiation and available resources derives from geographic delineation.

In addition, the thesis has revealed that while house architectures were generally distinct between language groups, there was consistent architectural stylism that intra-linguistically provided physical evidence of shared cultural histories and traditions, which at times were hundreds, if not thousands, of years old. Likewise, the research has shown (Chapter 5) an observable relationship between house form and historical migration patterns evolving from the original proto-Maya community over the last 4,000 years. Additional interdisciplinary research comprising architectural analysis of house form in conjunction with linguistic evaluation, ethnohistorical accounts and archaeological investigation would provide a more indepth understanding of Maya history and its various migrations and subsequent separations from the proto-Maya community. Evidence indicates that house form was more distinct between language groups, depending upon the longevity of temporal separation from the proto-community, while the sharing of various physical architectural traits was more obvious in those languages that had diverged in more recent times, such as the Pokomchi' and Achi', and the Yukatek and Itza'; leading to the author's argument that Spanish invasion stifled the design evolution and creation of certain house forms such as the Itza', which quite possibly would have undergone a transformative process if foreign influences had not prevented this from occurring. Of further significance was the observation that even though some linguistically-related groups were located in a similar geographic location, their house architectures were distinctly different, while other language-related groups that also shared geographic proximity exemplified a close relationship in architectural house form. This observation further supported the notion that the timing of cultural separation from the proto-Maya community was an important factor in the development of distinct house styles.

The documentation process has shown that the highest numbers of surviving traditional houses were located in remote areas where physical access was difficult. Such phenomenon illustrated that the maintenance of house traditions was not dependent on population size but locale. For example, at the time of this study, the Sipakapense had an official population of approximately 8,000 speakers, yet there appeared to be more traditional Sipakapense *casas de paja* remaining than the Kaqchikel with a population of 420,000 speakers. It may be argued that the reason for this disparity is the Kaqchikel peoples' proximity to Guatemala City, echoing a similar pattern as that of the Colonial era whereby cultural traditions were more likely to be maintained in those areas outside direct Spanish control (Chapter 4). Furthermore, the thesis illustrated that domiciliary patterns across the surveyed Maya groups indicated a long tradition of land tenure, whereby small kin-related satellite communities were connected through lineage to a much larger administrative town. The common arrangement of one-

room individual houses around a courtyard reflected the maintenance of pre-Columbian household configurations. Likewise, the thesis provides evidence (Chapters 5 and 6) of the material and symbolic significances of the physical forms of the houses surveyed in discussing the link between the physical form (construction and maintenance), human activity and anthropomorphic associations.

While in the field, the act of architecturally recording the physical elements of each house led to one of the most significant finds of this thesis, being that not one Maya house was circular in plan form, with all being either rectangular, square or apsidal (rectangular with elliptical ends). Historical evidence showed to sit in contrast to other Mesoamerican groups such as the *Triquis*, which exhibited circular house forms.[2] A second related observation was that all post-and-beam timber houses shared either four main structural posts, which were either located in the corners of square or rectangular adobe houses, or on the long sides for the rectangular and apsidal, and within the dwellings were three-stone hearths. Such regional commonalities pointed to a shared cognitive schema that served to conceptually generate the physical house form.

Semantic Associations of Maya House Architectures

In order to effectively investigate the possibility of an underlying metaphysical system, the research framework was extended to incorporate anthropological methods in addition to the architectural process. A review of past cross-cultural studies within the architecture discipline has shown an attempt at an understanding of the architectural form (construction techniques and detailing) at the expense of the social and cultural associations of that physical form. In the discipline of anthropology, the inverse situation has existed whereby the social and cultural aspects of houses are investigated at the expense of an understanding of the architectural form. Both disciplines display a methodological 'blind spot' in their approaches to historical analysis. However, the results of this thesis demonstrate that together, architecture and anthropology can become powerful allies in understanding human built environments, in generating a truly 'anthropological architecture'.

Due to his initial preoccupation when observing the shared physical features of house architecture during fieldwork, the author had no preconceived notions that an underlying pan-Maya religious philosophy may be influencing house form. Hence, the findings presented in Chapter 6 were the synthesis of early field-based architectural analysis interspersed with the results of later interviewing and an extensive post-fieldwork literature review. Unfortunately, this review of Mayanist literature revealed sparse evidence of the semantic associations in relation to the Maya house. Such a dearth resulted in the author inevitably correlating pan-Maya oral descriptions gathered during fieldwork with the limited published sources in order to discuss the concept of a common socio-religious philosophy.

Field interviews, as described in Chapter 6, focussed primarily on those people residing in traditional houses, and secondly on leading Maya academics and high-ranking 'traditionalists'. In the case of the former, the residents' interview process belied the physical results of the house survey, as it was difficult to find people in the field (even though they lived in a *casa de paja*) who understood the underlying influences of architectural form in which they lived. Most people advised that they knew of the existence of symbolic elements in the past but could no longer remember them, or had changed religion and no longer believed in the symbolism, preferring not to speak of the old ways. Making it even more challenging to investigate semantic associations of Maya houses in the field was the fact that not one of the houses surveyed had been built in the last 50 years. Most informants reported their houses to be in the order of 70 years old, and indeed some houses were reported to be the last of their kind.

The author garnered a better understanding of the pan-Maya semantic associations of house form through interviews conducted with leading Maya academics and a Kaqchikel 'traditionalist' *sacerdote* (shaman). Such interviews revealed that all Maya houses did indeed have a common underlying religious schema, which was expressed in various ways. As described previously, the four structural posts or corners of the rectangular and square house plans, in conjunction with the three-stone hearth, represented specific elements of Maya belief. Through an association between the human body and the Maya Creation story these elements had environmental, spiritual and political significance in supporting and reflecting Maya values through community and household activities. This semantic significance was non-verbally communicated through the normative socio-religious rules established in the configuration of house architecture, and was only understood by those who could read the architectural language and interpret its underlying meaning; the message of which was impossible to comprehend when one could not understand the cultural cues or architectural language underscoring the dwelling form. The house was a physical symbol of the Maya universe, and its meaning was only able to be deciphered by those who shared in its readability.

Moreover, the current research supports Prechtel's argument in *Secrets of the Talking Jaguar* that Maya *casas de paja* were built with a view to eventual renewal so as to encourage their maintenance through collective community action. This collective renovation was symbolically reflective of renewing the body, mind and soul of the house, its owners and its builders – tying back into the overall semantic significance of the dwelling in linking the Maya Creation event, human soul/body, nature and the broader universe. Additionally, Mayanist literature shows that this religious significance was also communicated through the physical settlement planning and the explicit symbolism of pre-Columbian temple and palace architecture. Similarly, the architectural form of the contemporary Maya house communicated a spiritual message, although in a much more implicit and subtle manner. This finding was significant and relevant for scholars studying past and present Maya built environments, adding further weight to the importance of recording Maya *casas de paja* before they pass.

With most previous studies looking at Maya houses individually versus pan-linguistically, this thesis is the first to attempt to draw this material together into a concise description of house architectural semantics at a regional level. The value of this approach being that if the researcher had not attempted to observe house architectures regionally, pan-Maya belief as a generator of house form may never have been realised. Due to the broad scope of this thesis, this concept has only been tentatively introduced at this stage; further analysis is required to fully understand in more detail the intricate linkages between Maya houses and the pan-Maya belief system. For example, how are slight differences in pan-Maya religious expression represented in individual house architectures and construction techniques?

Hypothesis: Indications of Proto-Maya Religious Foundation to House & Temple Architectures

Thus far, this thesis has shown that Maya *casas de paja* were a physical manifestation of the beliefs and associated lifeways of the Maya, as transformed through history, and has pointed to the possibility that a proto-Maya religious foundation may be read in the contemporary form of Maya houses. Potentially, the commonalities observed during the Maya house survey could be interpreted as maintaining an architectural lexicon from the earliest times of the proto-Maya community. The plan forms of the houses in question, in association with common construction methods and socio-spatial behaviours belie a semantic relationship, which the author believes may extend back to an original proto-Maya house architecture. Research conducted on Maya linguistic relationships favours migration away from an original Maya language and community, beginning at least 4,000 years ago although the exact timeline associated with these early migrations was difficult to determine through house architecture.

One hypothesis is that there was an original Maya community, which over time developed its own house architecture, incorporating specific semantic associations, domiciliary patterns and construction techniques, and reflecting the overarching belief systems of the community at that time. With the schism of the proto-Maya community into subsequent language groups, the semantic associations and domiciliary patterns of the original house were carried with the new groups and formed the basis for a new set of architectural house traditions. For each language group, house form reflected Maya cultural transformation through time while maintaining a strong link to the original architectural idiom and belief system. When viewed separately, these so-called 'vernacular' forms could appear as simple responses to geography, climate and the availability of local resources; however, in analysing them regionally, the presence of the pan-Maya belief system can be clearly seen. Therefore, change proceeded at the discretion of the Maya peoples themselves and branched with self-directed transforming beliefs, which can be juxtaposed against the external hegemonic influences that caused Maya house change in the contemporary period.

As the current analysis has only offered an introduction to the possibility of a proto-Maya house architecture, a more detailed investigation must be undertaken to arrive at a more complete understanding of the physical and metaphysical significances of Maya *casas de paja*. The observations contained in this thesis were not predicted when the research began and illustrate the importance generally of investigating house architectures from regional and pan-linguistic perspectives. Further ethnoarchaeological and architectural research may assist in shedding light on how this architectural evolution may have influenced temple and palace architectural development occurring during the same period.

Transformations of Maya House Traditions

As described earlier, the difficulties of fieldwork associated with investigating *casas de paja* and domiciliary patterns were largely the result of the dramatic transformations that have occurred to Maya built environments in recent times. Of the 27 houses found during the thesis investigation, it was reported that at least eight were either the last of their kind or were among the last. The degree to which pre-Columbian dwelling traditions have transformed made it impossible to ignore change as an important component of this thesis. Thus, the research has shown that these pre-Columbian house traditions appear to be ending, to be replaced by dwelling forms that are more representative of the desires and social values of contemporary Maya peoples in the study region. The thesis illustrates that perceptions of traditional practices are held differently between people and are dependent on their level of academic education. Change was generally seen in a positive light throughout the region. However, academically-trained persons were more likely to see benefits of traditional approaches to house architecture and balanced their view of change with consideration of what was lost, whereas the non-academically trained saw little benefit in the traditional approach, and only positives in change.

In line with this, Maya *chozas* or *casas de paja* in Guatemala and Mexico symbolised poverty and depression, and were commonly called *casas de los pobres* (houses of the poor). The majority of Maya people interviewed in outlying villages (*aldeas*) believed that such traditional housing held little benefit for them, describing them as backwards. Most of the houses documented in the survey were the last of their kind, and were either inhabited by an elderly couple or an extremely poor family lacking the resources to build a new house. *Casas de paja* were more likely to be located in remote townships than in contemporary urban communities. The predominant house form in the majority of Maya communities was no longer timber and thatch but concrete block and corrugated iron, which bestowed higher economic and social status, social progress and personal development upon its owners. One of the principal reasons for this change in building materials had been changing personal and social values in response to a desire to move away from housing that was subject to ridicule and discrimination.

Moreover, the thesis evidences that during the 70 years since Wauchope's original investigation a post-Second World War labour agreement between the U.S.A and Mexico was a major catalyst for change in the region's built environment. The dissertation has shown that while the transformations in Maya built environments in Mexico could be understood as a continuation of changes initiated with the Bracero Program in the 1940s, the situation was somewhat different in Guatemala. Although the Bracero agreement influenced transformations of Maya built environments since the 1940s, it was not the major factor in the dramatic transformations of Maya traditional housing stocks in the latter 20th Century. As seen in Chapter 7, the main influence regarding change processes in Maya communities was the 1976 earthquake and the Guatemalan Civil War of the 1980s and 90s. In addition, the thesis furnished evidence of other influences underscoring change, such as the involvement of religious and housing aid organisations in the region; however, these were secondary in their affect.

In coming to a greater understanding of traditional house configurations, the author noted similarities in the layouts of domiciliary complexes having undergone transformation in their material finishes, and showed a distinct evolutionary process in the transformation from traditional houses to contemporary concrete and sheet metal dwellings. In terms of the physical transformation, the usual pattern was an initial evolution of house form whereby 'modern' non-local building materials slowly replace the older components of the house. For example, corrugated iron would replace a thatched roof one sheet at a time. The final stage of this process was the complete removal of the old house in order to construct a new house of concrete block and iron. This process did not result in a new domiciliary pattern as the new forms were constructed on the locations of old houses, and typically retained the traditional layout, which acted as the foundation and counterpoint of change.

Generally, new building works accorded with pre-Columbian patterns as houses were still one-room single-storey dwellings configured around a central courtyard, although this was not the case for common aid housing. Typically, one of the major differences observed was the addition of an external kitchen house adjacent to the main living area to mitigate inferior air quality in the newly constructed concrete house. Decreased ventilation in concrete and corrugated iron houses made it necessary to add a secondary structure to shelter the cooking area in lieu of the use of gas, which was almost unaffordable in the study region. The final stage in the physical evolution of house form was the addition of internal rooms, and extras storeys above the original single-storey dwelling. From a material perspective, these new houses became delinked from place-defining local resources, and were instead linked to external consumptive resources available on the open market, most often sourced at great distance from the site.

Further research focused on the influence of 'aid organisations' whereby external 'authorities of change' placed value on aspects of Maya built environments that were not relevant to the traditional

settings in which they were situated. This attitude and method of application lacked consideration and respect for Maya traditional values, and ignored self-determination in the construction and representation of Maya identities and built environments. The house forms not only differed from traditional *casas de paja* but also from the way in which contemporary Maya had modified and accommodated the concrete block and sheet roof house form. Furthermore, in appearing reminiscent of Spanish colonial-era policies, these organisations created instability through valuing economic outcomes over social behaviours and other cultural norms. Chapter 7 showed that such architectural forms negatively affected Maya adaptive capacity in the construction of their own built environments and related architectural representations, and suppressed the modern Maya self-determining their house transformation.

When compared to concrete block houses, the beneficial aspects of pre-Columbian Maya houses were that they had lower construction costs through community participation and sustainable resource appropriation and good internal ambience. In opposition, traditional house involved higher time costs associated with material procurement processes and maintenance regimes with no capital gain and lower levels of personal security. However, as reported by all informants during fieldwork, the most negative aspect of traditional houses at the time of writing was their diminished social status within the Maya community. In the past, pre-Columbian houses were evidence of a link with region, ethnicity and occupation; however at the time of investigation, new styles of concrete and corrugated iron rural houses did not reflect or support traditional agrarian lifestyles (e.g. drying and storing maize and beans, cooking indoors). Traditionally, social status lay in modes of material production, whereas new house forms appeared to lie in consumption. Thus, the meanings associated with the house have shifted from one of production to consumption, which itself lay at the centre of the transformation from one mode of living to another.

Transformed Semiotics and the Tradition of Change

An understanding of the processes and influences of changing physical patterns has led the author to question whether or not there are related transformations in the original cognitive schemata of the Maya house form itself. It was found that the use of traditional beliefs in generating contemporary forms of concrete block housing depended on whether or not one still chose to participate in the traditional system. Thus, if the belief system had changed, so too had the semantic associations of house form, resulting in a denial of cosmological associations in the physical form of the house. Interestingly, the author observed that community status and extroverted displays of wealth had become more important for those living in concrete block houses, whereas those peoples continuing to follow the old ways and living in *casas de paja* were more likely to resist outward displays of wealth.

Additionally, the research found that the existence of the pan-Maya conceptual association of 'renewal', rebirth and death was a cognitive mechanism that equipped the Maya with a positive attitude and adaptability to changing social circumstances and physical contexts. This cognitive 'tradition of change' enabled the Maya to accommodate, absorb and synthesise new ideas without destroying the basic ideational foundation that allowed people to survive past and present hegemonic attempts by outsiders to control their society. After the period of initial contact with the Spanish, Maya life began a process of enculturation, which has continued to occur for the last 500 years. However, Maya cultural diversity appears to have remained largely intact since the time of first European contact, being evident in language, vestige, and dietary staples, and not least of all, architectural typologies. Due to this socio-cultural diversity, and combined with geographical variety, there has never been a homogenous response to the local cultural environment in relation to the influence by the Spanish and now more recently the *ladino* cultures. As a result, when one looked at the colonial history of the region, the political diversity was pervasive with each region, be it Highland or Lowland, and influenced in different ways, for different lengths of time and different reasons, which itself had resulted in a contemporary politico-cultural landscape that varied between regions on a macro scale and altered between communities on a micro scale.

Accordingly, traditional Maya houses had served their purpose for hundreds, if not thousands of years. However, the nature of pan-Maya belief was that if the house's purpose was made obsolete by changing social contexts, then the physical transformation of the house should not be mourned or resisted, but expected and desired (see Chapter 7). As previously mentioned, a shift in the symbolic associations of house form signified a shift in belief systems and vice versa. Architecture was reflective of social values, whereby adaptation and building change went hand-in-hand with cultural survival. Accordingly, new houses have remained central to the representation of some traditional behaviours and beliefs, but can no longer be read visually as indexing their place and locality. At various given times, traditional semantics have been demoted, reflecting the historical and social context at the times.

Contribution to Architectural Theory

One of the main aims of this thesis was to investigate ways that the ethnographic study of Maya house architectures could contribute to a cross-cultural understanding of architecture. As mentioned previously, in setting out to achieve this, the researcher combined architectural and anthropological methods to investigate the physical forms of *casas de paja* on a regional pan-Maya scale. This ethnographic course led to the discovery that an underlying religious symbolism had been involved in generating those original house forms, providing historical evidence of a 4,000 year old house tradition. Through the study of the semantic associations of pre-Columbian traditions, aspects of the original proto-Maya house could be seen and understood. Consequently, with the obvious passing of pre-

Columbian house traditions, the next course of action was to investigate the processes and influences of house transformation in detailing the related changes in the physical form and semantic traditions. The final method was to use those findings to challenge existing theoretical debates in contributing to the development of a unified cross-cultural architecture theory and research scholarship. With this in mind, and in conjunction with the historiography presented in Chapter 2, the thesis has challenged the methods and theoretical frameworks used to understand so-called 'vernacular' architectures in current Euroamerican architectural discourse.

In reflecting on the research project over the last nine years, the author never predicted that a study of pre-Columbian Maya house traditions would end by confronting the dominant contemporary Euroamerican architectural theory paradigm. In saying this, the fact remains that the house architectures under investigation in this thesis were part of a pre-Columbian tradition with a history that extended back beyond Vitruvius, beyond the Romans and Greeks, and beyond the origins of Euroamerican architectural theory; having had a longer cultural history that predated the emergence of the dominant Euroamerican architectural discourse. Consequently, it seemed logical then that the cultural knowledge systems embedded in the physical forms of *casas de paja* could contribute to a greater understanding of the cross-cultural corpus of past and present human endeavours. As the research progressed, the position on challenging existing architectural concepts became ever more pressing. It was evident that the theoretical constructs upon which the researcher was relying to understand Maya house traditions were not sufficiently theorised in the academic architectural record.

Similarly, in *Function and Meaning in Classic Maya Architecture*, Houston advocates a reformation of the architecture paradigm in creating a "sound theory that will relate elite and non-elite architecture and establish better understandings of Maya systems of design, patronage, and construction."[3] He criticises the subjective dominant 'art history' approach as poor anthropology in evaluating difference in the architectural record through "the perpetuation of rigid distinctions between so-called high-style buildings and vernacular, 'low-style' structures".[4] From an archaeologist's perspective, Houston identifies that current definitions, while perhaps useful in distinguishing between different kinds of buildings, make it difficult to evaluate architectural traditions that fall outside mainstream Euroamerican understandings of architecture.[5] He continues: "The view that vernacular tradition develops apart from high style, or that the vernacular responds passively to design changes of an elite sort, fails to take into account the 'variety and dynamics of societies', the great complexity of interaction between different builders, their techniques, and varied needs and motivations."[6]

In terms of a contribution to architectural theory, an evaluation of pre-Columbian house traditions has illustrated that on one hand, from the perspective of the architectural art historian, and observed

individually, these houses could be viewed as repetitive passive responses to environmental and economic criteria that lack stylistic innovation, unworthy of the title 'architecture'. However, when analysed regionally, these houses demonstrate the synthesis of the relationship between worldview and cosmology as an underlying generator of house form and architecture. Theorists have written of architecture's ability to signify and encode messages in built forms since Virtruvian times. A great deal of theory has dealt with non-verbal communication in relation to the high-style architectures of the Euroamerican tradition with a relatively limited number of architectural studies having attempted an understanding of non-verbal cues in non-Euroamerican architectures. A key finding arising in this thesis has been the author's realisation that once inducted into a particular local knowledge system one can appreciate such architecture in a new light. By way of example, the author posits that an ability to read non-verbal architectural cues in cross-cultural research is vital in order to understand the coded social and cultural values of a people in a given moment. If this non-verbal language is misunderstood by those not fluent in its usage, then there could be incorrect assessments as to a subject's true significance. As discussed in Chapter 2, since Vitruvian times, vernacular architecture as the 'Other' in the Euroamerican architectural tradition has been burdened with such a history. The author now contends that the time has come to formally recognise, through theory and practice, these human architectural manifestations as significant to the canon of world cross-cultural architecture, and worthy of further investigation of their histories and cultural contexts.

Even though a people's buildings may not have appeared to physically express an idea or cognitive schema through decoration, it did not mean these buildings were not communicating something to those people who could read and interpret their language. It was important in the current study to understand these architectural forms in relation to the historical context in which they were originally conceived. In the Maya case, not only were the elite temples and palace complexes explicitly transmitting architecturally-coded 'divine' messages, but, as this thesis has demonstrated, so were domestic dwellings. Houses were participating in a social act, supporting behaviours and representing beliefs, being a written language and vehicle of religious communication. Thus, Maya *casas de paja* evinced a broad cultural acceptance of a pan-Maya worldview, explaining many of the underlying reasons for the repetition of house form in a given location. When viewed in terms of their historical context, these houses represented their owners' concordance with ancient, pre-Columbian, belief systems. This broad cultural acceptance may be seen as the reason for an apparent lack of architectural variants in a given locale, for to do so may have compromised one's beliefs, which not only structured the physical form of the house, but also the behaviours associated with its use.

Challenging Definitions in Cross-cultural Architectural Research

According to the author's literature analysis, this thesis presented a comprehensive historiography of vernacular architecture studies (VAS) in order to position the etymological and epistemological

history of 'vernacular architecture' as an adjunct concept to the broader Euroamerican academic tradition. Beginning with Vitruvian times, the thesis (Chapter 2) has shown the history and practice of Euroamerican architecture to be a subjective human pursuit with no definitive construct of its theoretical foundation. It appeared from literature analysis that the transformations in human socio-economic conditions through the ages, each new generation of architects reinterpreted and challenged past theoretical constructs in what appeared to be a constant search for architectural 'truth'; architecture was part of the human response to the difficult historical situations posed by transforming human environments.[7] At the same time, the study and appreciation of so-called 'vernacular architecture' has remained a politically charged realm, in challenging the doctrine of architectural 'truth'.

In relation to architectural history, the author contends in Chapter 2 that Vitruvius also used the vernacular as a political tool to demonstrate the superiority of Roman thought over 'Others', which set the original foundation for the historical perception of the 'vernacular' as a distinct subset of architecture, irrelevant to the representation of 'modern' humankind. In addition, the thesis exposed the etymological definitions of architecture and vernacular, which shifted according to the historical context of the time with vernacular architectures seen at times as an inspiration for the future, as in Alberti's *Santa Maria Novella*, or romanticised as architectural inspiration from an obsolete past, as in Rudofsky's *Architecture Without Architects*. Likewise in contemporary times, in architectural academia, students of architecture are taught VAS as a subject outside mainstream architectural history and theory, with the intention of illustrating the pre-eminence of the latter over the former. As Houston states: "Many definitions, particularly traditional ones, sit firmly in the Euroamerican tradition, which defines vernacular buildings mostly in terms of what they are not: they are not created by professional architects, they are neither 'high-style' nor monumental, and they do not result from individual genius."[8]

It is feasible that the incorporation of non-Euroamerican architectural traditions as 'architectures' rather than 'vernacular architectures' within a Euroamerican-inspired theoretical framework will not only expand the realm of architectural history and theory but will also serve to democratise the discipline and practice of architecture itself. Likewise, Willey in *A Consideration of Archaeology* asserts: "The studies of so-called vernacular architecture (like barns) no longer seem eccentric in an atmosphere in which architecture can be defined not in terms of monuments but as any changes at all that man makes in his environment".[9] The proposition for a recasting of this dichotomous relationship is not a new phenomenon in VAS, as Upton, Glassie and Davis have called for its re-evaluation in the past.[10] As discussed in Chapter 2, Upton calls for a 'new architectural history' to replace the present 'art history' dominated architectural history and theory, which largely ignored vast regions of what was defined as the vernacular built environment.[11] He declares that as VAS has drawn "nearer to cultural theory and to the new art history" in looking at academic buildings with 'vernacular eyes',

Fiske Kimball's original "line between vernacular and academic architecture will be erased and the dichotomy will be replaced by a much more complex paradigm that recognizes change and stasis, diversity and conflict, pattern and discontinuity in all varieties of architecture."[12]

Similarly, Glassie in *Vernacular Architecture* contends that the study of vernacular architecture is "an approach to the whole of the built world"[13] and appeals for greater acceptance of non-elite architectures in 'academic' architectural history.[14] Importantly for vernacular architecture studies, Glassie sees VAS as lifting a previously neglected canon of architecture out of historical obscurity and into contemporary awareness. He is scathing of the lack of appropriate research of these traditions and declares that to neglect the study of certain buildings while choosing to value the study of others was a sign of academic ignorance, which in itself was a rejection of cultural diversity, difference and conflict.[15] In drawing attention to this as an issue, Glassie asks for a "more expansive and inclusive history, one fit to the world we [now] inhabit, a history that can guide improvements in architectural preservation and in new architectural design, a history that can help us live meaningfully and decently upon the earth."[16] In support of the 'vernacular', he affirms that such buildings also "embody values alien to those cherished in the academy" and that "the study of vernacular architecture, through its urge toward the comprehensive, accommodates cultural diversity...[and acknowledges]...the reality of difference and conflict."[17] Additionally, he was critical of the art history dominance in Euroamerican architectural discourse and discusses the future obsolescence of the term 'vernacular':

> Should we wonder why architectural study has aped the study of art in its erection of a canon of important buildings, we will find, on reflection, a host of causes. One of them has to do with the ease of procedure. Selecting a few buildings, a few architects, and then linking them up chronologically, we can borrow the facile techniques of the historian of great men and events. But taking the comprehensive view and recognizing diversity, the study of vernacular architecture drives toward better historical procedures, ones that focus existentially on action and lead to the construction of a multiplex idea of time. We call buildings vernacular to highlight the cultural and contingent nature of all building. Proposing distinctions and labelling buildings along the way, the study of vernacular architecture is an approach to the whole of the built world. It favours completeness, recognizes diversity, and seeks ways to use buildings as evidence in order to tell better versions of the human story. In the future, it will be obsolete, but now the term 'vernacular' is one of the tools we use when we face architectural objects with a wish to crack them open and learn their meanings.[18]

Of further interest, there is a direct correlation between the arguments offered by Upton and Glassie above and those of Lethaby some 80 years ago in *Architecture: An Introduction to the History and Theory of the Art of Building*.[19] In 1929, Lethaby, one of the main protagonists of the British Arts and Crafts movement proposed a re-evaluation of the definition of architecture and its relationship with so-called 'mere' building, stating: "It is impossible to differentiate architecture from building, and probably we shall not find any need for so doing if we realize how truly interesting is the art of building, and that it is in all buildings throughout the ages, not in a picked few, that we find the impress

of man and his aspirations."[20] The arguments above have reinforced the need for the development of a cross-cultural theory of architecture capable of unifying the entire corpus of human architectural endeavours through time.

The Value of Anthropological Architecture in Cross-Cultural Architectural Research

The outcomes of this thesis would not have been possible without the combination of anthropological and architectural method, and are significant for the study of architectural ethnography, ethno-history, ethnoarchaeology and anthropology in relation to human built environments. Separately, these two disciplines – architecture and archaeology – would not have been able to achieve such an indepth understanding of the physical built form and its meanings and associated behaviours. Of further importance was the early realisation in the thesis writing process that induction was the best method to draw out a cross-cultural understanding of the architectural and social significances of Maya traditional environments due to its flexible and fluid method in allowing an evolution of aims and approaches during investigation. Furthermore, this thesis has determined that in cross-cultural architecture studies, a better understanding of house architectures can be gained through an understanding of the non-verbal cues built implicitly into such architectures; without the integration of anthropological methods, the researcher would never have gained a thorough understanding of this phenomenon. As the majority of architectural history and theory dissertation in academic institutions around the world have ignored anthropological approaches to architecture, it is little wonder that many architectural academics, practitioners and theorists have missed these cues when observing the so-called 'vernacular' architectural objects of 'Others'. In saying this, the thesis calls for a greater integration of anthropological concepts and methods in architectural education in a cross-cultural research context.

Towards A Unified Cross-Cultural Theory of Architecture[21]

Drawing on the foregoing framework of theoretical ideas, which could collectively be called 'anthropological architecture', this thesis should now return to a working cross-cultural definition of architecture[22] as a selected, arranged and constructed configuration of environmental properties, both natural and artificial, in and around one or more activity spaces or behavioural settings, combined with patterns of behavioural rules and meanings. Such a definition must incorporate cultural constructs of space and time to result in human comfort and quality of lifestyle within a wider large-scale system of cultural landscape and settlement. Evidently, the entire genre of Euroamerican architecture has dwelled within this broad definition, as well as many other genres from all of human societies and cultures, past and present. Contained by these diverse cultures there have been a range of cognitive, invisible, ephemeral, spiritual, and symbolic properties that could instil architecture with a culturally distinct nature, in addition to the physical attributes of buildings.

Central to the task of accommodating the world's diverse cultural traditions has been the development, analysis and comparison of case studies, which when integrated generate robust explanations of: (i) the dynamic properties of architectural activity occurring both within and between cultural groups and longitudinally and cyclically through time, (ii) the study of the environmental, social, economic and cultural origins of places and buildings, (iii) the full complexity and range of architectural articulation from the minimalist adjustment of natural environments to highly complex structures with multiple overlays of properties, (iv) consideration of the full range of properties of people-environment transactions that might contribute to what or how architecture is defined, and (v) the sociology of power and authority in environmental decision-making, and the ways that different authority systems can result in culturally distinct differences in architectural design. One key issue has been whether it was more theoretically useful to broaden the definition of architecture to encompass all human building and place making, or to broaden the definition of vernacular architecture to incorporate all 'architecture'. Conventionally, architects have chosen the former path, and argued that non-Euroamerican cultures need not be burdened with the idea that 'architecture' must be presupposed as being a success word compared with building. Yet if other cultures could be recognised as having their own law, medicine and art, then why not architecture?[23] However, this broad proposition now requires greater detailed analysis and indepth study. As Glassie states:

> Our need is for a more expansive and inclusive history, one fit to the world we inhabit, a history that can guide improvements in architectural preservation and in new architectural design, a history that can help us live meaningfully and decently upon the earth. It cannot be based solely on writing, the expressive mode of a rare few. Material culture – human work made permanent in buildings and books, in clothing and tools – provides the resource.[24]

This thesis has shown that the history of VAS in the last 100 years has not only drawn heavily on anthropological theory and method, but has been dominated by non-architects. Thus, it has become the author's contention that a unifying cross-cultural theory of architecture, which draws from a multidisciplinary foundation, is needed.

The reason for proposing a redefinition of the etymological and epistemological frameworks of so-called 'vernacular' architectures within the dominant mainstream architectural theory is partly based on the author's perception that until respect is shown for these cross-cultural architecture traditions, the heterogeneous future of human settlements and habitation throughout the world is in jeopardy. The current discussion may seem somewhat divorced from global problems at this time, however, definitions contain political connotations which point to a general problem in Euroamerican theory of accepting the knowledge systems of others as valuable and relevant in addressing the issues facing the world today. This thesis has shown that the 'modern' cultural experiment is ending as the world battles climate change and population growth and has shown that the reconfiguration of definitions is

important in creating greater Euroamerican cultural awareness and acceptance of non-Euroamerican approaches. The significance of challenging the dominant theoretical paradigm lies in the design of human settlement patterns and built environments in providing appropriate habitation that takes into consideration many of the embedded cultural knowledge systems of so-called vernacular environments in reducing world poverty and advancing sustainable human lifestyles on the planet. These arguments reinforce the need for the future development of a cross-cultural theory of architecture capable of unifying the entire corpus of human architectural endeavours through time.

Final Statement

In revisiting and extending Robert Wauchope's original 1930s investigation, as published in *Modern Maya Houses,* this thesis has provided a definitive historical record of the physical architectural forms of Maya *casas de paja* in Mexico and Guatemala, and given evidence of the link between the physical architecture and the metaphysical (semantic) associations of Maya traditional belief systems, which prior to this investigation were not known or discussed in the academic record. Of great significance was the finding that many of the documented houses shared pan-Maya architectural traits, leading to a hypothesis that at some point in their history, there was a proto-Maya house belonging to an original Maya community. Linguistic evidence has supported this assertion; however, it was more difficult to prove through an analysis of architectural form. This thesis has also provided a snapshot of the influences underscoring the transformation of Maya house architectures in the 70 years since Wauchope's seminal investigation.

Through methods of visual anthropology, interviewing techniques, architectural documentation and an extensive literature review, the thesis has shown anthropological architecture is a serious endeavour in cross-cultural architectural research, and proposes that it become an alternative approach to Euroamerican 'art historicism' and period aesthetics in the cross-cultural history and theory of 'architecture'. The thesis has called for a repositioning of the entire corpus of human architectures within an historical framework, not excluding certain architectures due to them being 'ill-understood' or 'different'. In addition, the thesis highlighted the value of an anthropological education for architects working in cross-cultural settings, and encouraged the pursuit of an inductive methodology in allowing for all possibilities in such research.

The ethnographic record detailed in this thesis has posed a legitimate challenge to contemporary theoretical constructs of 'architecture' and 'vernacular' in Euroamerican architectural theory. The term vernacular may be useful in the Euroamerican context, however it is the contention of this thesis that it is no longer relevant for cross-cultural architecture studies – thus the reason for using the term 'house architectures' more frequently than 'vernacular architectures' throughout this thesis. On balance, it has been more useful to describe the exact nature of the subject. In light of this, the author

contends that the definitional use of 'vernacular architecture' is obsolete in cross-cultural architectural research, and should be abandoned.

Now that an initial understanding of Maya cosmology and its influence on architectural form is understood, a future research project would be to return to Guatemala and Mexico to investigate the scope of this pan-Maya belief system. It would also be interesting to investigate whether there are other variants of this belief system influencing architectural form and socio-spatial patterns. For example, a joint research project, in combination with Mayanist archaeologists, promises the opportunity to further examine the original proto-Maya house form.

For the author, this thesis has been the continuation of an interest in the significance and value of Maya houses to Maya and non-Maya alike. Much of the architectural research undertaken in the Maya realm continues to be elite-centric, focusing on the seemingly more impressive temples and palace complexes in evaluating how the Maya lived in the past, and relying on the interpretation of archaeological evidence and ethno-historical accounts. It is hoped that the work presented in this thesis has built on the significance of Wauchope's work, and has contributed to the greater field of Maya studies, and the future of Maya residential architecture and its understanding.

This thesis has formed the beginnings of an atlas of Maya house architectures; however much work remains to be completed, requiring detailed investigations in order to arrive at a better understanding of the physical and metaphysical significances of Maya *casas de paja* and the ways in which contemporary Maya house traditions are accommodating customary lifeways. Overall, the significance of this thesis has been its approach to understanding a subject (Maya cultural heritage) and its related objects (house architectures) in relation to its broader social and cultural context and history. In terms of the future of cross-cultural architectural research, this thesis has shown that the study of an individual house must be seen within a regional historical framework and vice versa. Such house traditions, as those presented in this thesis, would never have elucidated their true architectural significance on their own. In a similar manner to the Maya peoples and cultures themselves, the true significance of pre-Columbian *casas de paja* could only be understood when viewed communally. More time now needs to be spent appreciating these manifestations and their significance for the future of Maya settlements and human habitation worldwide. In coming to a greater understanding of a past (pre-Columbian) and present (Maya *casas de paja*) subject, the thesis calls for an understanding, appreciation and acceptance of non-Euroamerican architectural forms by Euroamerican academics and practitioners in moving toward a greater acceptance of a diversity of human needs in the creation of social, cultural and built environments. The overall significance of this thesis lies in the position that the sustainability of lifestyle practices, and allocation of wisdom, skills, and the fulfilment of human needs, as embodied in building 'traditions', are of major relevance to current and future generations.

Endnotes

[1] This was the opinion of Marcel Vellinga, co-author of the recently published *Atlas of Vernacular Architecture of the World*, when presented with the current author's work at the IASTE Conference in Bangkok, December 2006.
[2] See F. Starr, *Indians of Southern Mexico: An Ethnographic Album* (Chicago: University of Chicago Press, 1899), Plate LXXII.
[3] S.D. Houston, "Finding Function and Meaning in Classic Maya Architecture," in *Function and Meaning in Classic Maya Architecture*, ed. S.D. Houston (Washington D.C.: Dumbarton Oaks, 1998), 527.
[4] Ibid.
[5] Ibid.
[6] Ibid., 526.
[7] See J. Rykwert, "Editor's Foreword," in *Ten Books on Architecture by Leone Battista Alberti*, ed. J. Rykwert (London: Tiranti, 1955), v.
[8] Houston, "Finding Function and Meaning in Classic Maya Architecture," 525.; after D. Upton and J.M. Vlach, eds., *Common Places: Readings in American Vernacular Architecture* (Athens: The University of Georgia Press, 1986), xiii-xxiv.
[9] G.R. Willey, "A Consideration of Archaeology," *Daedalus* Summer 3 (1977).
[10] H. Davis, *The Culture of Building* (New York: Oxford University, 1999).
[11] D. Upton, "Outside the Academy: A Century of Vernacular Architecture Studies, 1890-1990," *Studies in the History of Art* 35 (1990): 210.
[12] Ibid.
[13] H. Glassie, *Vernacular Architecture* (Bloomington: Indiana University Press, 2000), 21.
[14] Ibid., 155.
[15] Ibid., 20.
[16] Ibid., 155.
[17] Ibid., 20.
[18] Ibid., 21.
[19] W.R. Lethaby, *Architecture: An Introduction to the History and Theory of the Art of Building*, The Home University Library of Modern Knowledge (London: Thornton Butterworth Ltd, 1929), 9-11.
[20] Ibid., 13.
[21] This section of the thesis has already been published as a conference paper and subsequent article. See P.C. Memmott and J.S. Davidson, "The Configuration of a World Cross-Cultural Theory of Architecture: Exploring the Treatise," in *Creating and Contesting Exclusionary Architectures* ed. N. AlSayyad, *Traditional Dwellings and Settlements Working Paper Series* (San Francisco: International Association for the Study of Traditional Environments, Center for Environmental Design Research, 2006).
[22] This definition was initially developed by Memmott and Go-Sam in 1997 and later refined by Memmott and Davidson in 2008. See ———, "Exploring a Cross-Cultural Theory of Architecture," *Traditional Dwellings and Settlements Review* 19, no. 11 (2008).
[23] Ibid.
[24] Glassie, *Vernacular Architecture*, 155.

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